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# ***JPRS Report***

# **Science & Technology**

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***Japan***

ANALYSIS OF TRENDS IN INTRODUCTION  
OF FOREIGN TECHNOLOGY

SCIENCE & TECHNOLOGY  
JAPAN

ANALYSIS OF TRENDS IN INTRODUCTION  
OF FOREIGN TECHNOLOGY

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## **Analysis of Trends in Introduction of Foreign Technology**

93FEO817A Tokyo SCIENCE AND TECHNOLOGY AGENCY in Japanese Jan 93 pp 1-148

### **[Text] Preface**

As a country established on the basis of science and technology, Japan, undeniably needs to promote development of our its technology. However, it is also important to plan for the introduction of appropriate foreign technology to aid the prioritized and efficient development of Japanese technology.

To achieve that goal, and as a partial means of better understanding the status of Japan's science and technology activity, since 1965 the Science and Technology Agency has been conducting surveys on the introduction of foreign technology. The collection and analysis of the survey data was originally carried out as under the Foreign Exchange and Foreign Trade Management Act's reporting requirements for contracts agreed upon for the introduction of technology. This practice continues as part of the "Annual Report on the Introduction of Foreign Technology."

During fiscal year 1991, some report items were cut in a partial revision of the Foreign Exchange and Foreign Trade Management Act. Because of this, statistical data is missing on some items. However, to the extent possible, this report conforms to the format of previous years.

Moreover, although previously data was organized by type and by aggregate, due to the focus on the technology imported, this time it is also analyzed according to the industry type of the introducing company. The Agency would like to compare and examine other related statistics henceforth. Accordingly, if readers of this volume would give the Agency your opinions on the surveys, that would help future volumes to better convey Japanese trends in the introduction of foreign technology.

Cooperation from various agencies and individuals helped in the creation of this report. Their help is warmly acknowledged.

Fujio Sakauchi  
Policy Institute, Science and Technology Agency  
February 1993

## Summary

In fiscal year 1991 there were 3,175 new contracts for the introduction of foreign technology, a decline of 1% compared to the previous year and the first decline since 1986. When the introduced technology is broken down by mid-level category, it reveals that, with 1,988 contracts (63% of the total) in the year, there is a trend toward more introduction of technology in the category of electrical machinery and apparatus. The other categories are: general machinery and apparatus, chemical products, clothing and textile products, and other products. Introduction of new technology declined in each of these categories except for clothing and textile products. More detailed statistics show 1,614 contracts in computers or 51% of total contracts (up 2% over the previous year) revealing that leadership in the introduction of new technology continues to be taken by this category. It is followed, in declining order, by electronic and communications parts, outer garments, pharmaceuticals, and transportation machinery.

The United States accounted for 63% of the contracts of technology introduction, down 6% from the previous year. It was followed by England, France, Germany, and Switzerland. France and England showed increases of 30% and 15% respectively. Broken down by mid-level categories, electrical machinery and apparatus from the United States was the biggest category, accounting for 47% of the total. It was followed, in declining order, by general machinery and apparatus from the United States, and electrical machinery and apparatus from England.

The United States accounted for 76% of technology introductions in the category of computers, followed by England, Canada, and France. France showed a big increase of 85% over the previous year.

In the high technology area, software accounted for 1,522 contracts or 48% of the total. The introduction of software also dominated the computers category. It was followed by semiconductors and hardware. Technology trade figures show that, in terms of money spent on technology introductions, there was an increase of 8%, whereas money received for technology exports rose 16%. The ratio of money spent to money earned was 0.46, an improvement of 3% over the previous year.

The types of technology introductions were: know-how, 82%; patents, 24%; and trademarks, 16% of the total. The know-how category grew by 2% over the previous year.

As for categories of licensing royalties, the "other" category (non-percentage based arrangements such as payment per unit) was biggest at 49% (down 8% from the previous year). The category of "5% to 8%" grew at 7% over the previous year, the biggest gain. In the category of electrical machinery and apparatus, the "other" category accounted for 73%, down 11% from the previous year.

As for the duration of the contracts, "other" (no set period) made up 42% of the total (an increase of 0.4% over the previous year). The same answer was given for 55% in the electrical machinery and apparatus category.



Looking at export status (for the period April to December covered by the old law), 62% of the introduced technologies could be used only within Japan (export forbidden). The percentages for "Japan only," "Asia," and "world-wide" rose by 6%, 4%, and 2% respectively.

Renewed contracts accounted for 33% of the total, up 2% over the previous year.

More than 32% of the introducing companies had capital of ¥50 billion and up, a figure 2% higher than last year. The category with the biggest increase—8%—since last year was companies of capitalization from ¥50 million to under ¥100 million.

This report began looking at technology introduction by industry. In the electric field there were 524 contracts or 26.4% of the total in the wholesaling of textiles, machinery and apparatus, construction materials and so on. These were more numerous than in the electric-related industries, reflecting the emergence of borderless corporations.

There was little variation in industries when grouped by country providing the technology. For all countries but France, computer-related technology was the number one technology introduced into Japan. The top rankings for France were: textile industry, 16.6%; and wholesalers in industries such as clothing, foods, and furniture, 12.2%.

Technology introduced by trademark was concentrated in fashion-related areas, with 68 contracts in clothing, food, and furniture, and 67% in textiles. Ninety-two contracts or 45% of all introduced by patent were in the electrical machinery industry. Contracts using introduction of know-how were most numerous in the categories of wholesaling industries such as textiles, machinery and apparatus, and construction materials (507 cases) and electrical machinery (418 cases), but in both instances the introduction of software-related technology was most common.

Because of the procedural changes accompanying the revision of the Foreign Exchange Act which took effect on January 1, 1992, some statistical items are totaled in two categories: before and after Act revision.

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## Part 1 Analysis of Trends in the Introduction of Foreign Technology

### 1.1 Number of contracts for the introduction of technology

• Number of new contracts for introduction of technology total 3,175, down 1% from the previous year and 1.5 times the number of 10 years earlier

In fiscal year 1991 the number of contracts for introducing new technology (referred to henceforth simply as "contracts"), totaled 3,175 contracts, down 36 contracts (1.1%) from the previous year.

Data for the past ten years of contracts (see Figure 1 and Table 1) show that the number of contracts declined in years of economic recession, as in 1981 and 1983, but rose by 14.7% in 1987 and has shown a rising trend ever since. In 1990 contracts increased by more than 10% for the first time in two years, but declined slightly in 1991. 1991 contracts were 1.3 times as many as the number five years earlier and 1.5 times the number ten years earlier.

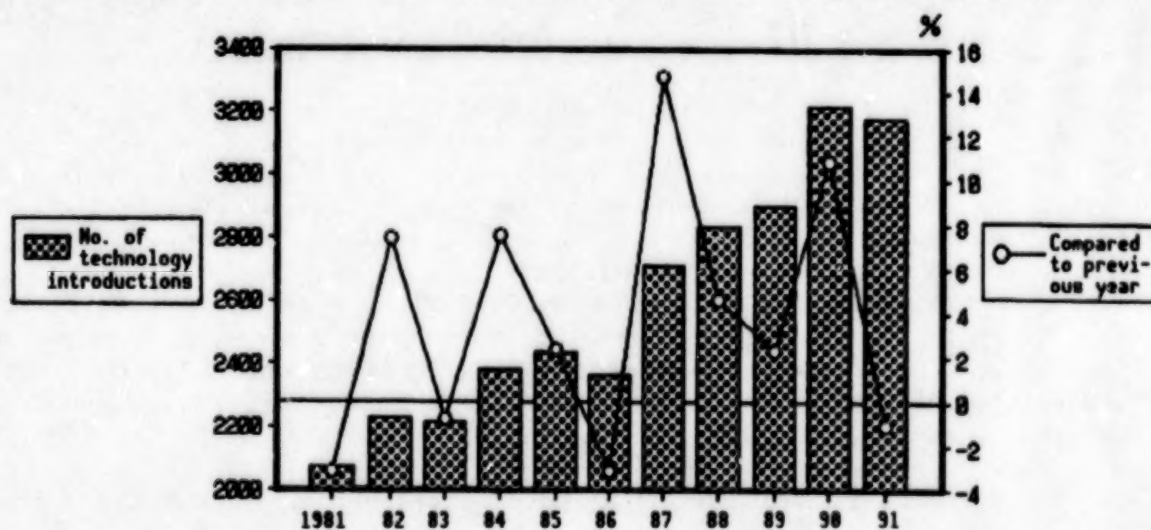


Figure 1. Changes in Number of Contracts Introducing Technology

As Figure 2-4 in Part 2 shows, the number of trademark only contracts totaled 361 (down 11.3% from the previous year). When these contracts are not considered, that leaves 2,814 contracts or an increase of 10 contracts (0.4%) over the previous year.

Moreover, as Table 1-2 shows, total contracts (A) included 73 extensions of expired contracts (B: actually extended contracts). However, this number applies only to the period covered by the old law.

Note: Because of the procedural changes accompanying the revision of the Foreign Exchange Act which took effect on 1 January 1992, some data was collected only from 1 April to 31 December 1991. See the following table for the major changes.



**Table 1. Changes in No. of Contracts Introducing Technology**

Year	No. of technology introductions (A)	No. compared to previous year (%)	Actual extensions (B)	Technology increases (C)	Actual technology introductions (A-B+C)
1981	2,076	-3.1	251	188	2,013
1982	2,229	7.4	134	207	2,302
1983	2,212	-0.8	56	214	2,370
1984	2,378	7.5	144	177	2,411
1985	2,436	2.4	135	225	2,526
1986	2,361	-3.1	112	218	2,467
1987	2,709	14.7	126	224	2,807
1988	2,834	4.6	84	263	3,013
1989	2,898	2.3	50	235	3,083
1990	3,211	10.8	74	324	3,461
1991	3,175	-1.1	About 73	264	3,366

• Contracts revised with an increase in technology totaled 264, down 19% from the previous year.

Revised contracts totaled 1,200, down by 83 contracts (6.5%) from the previous year. Of those contracts, 264 were contracts revised accompanying an increase in technology (C: actual new contracts), down by 60 contracts (18.5% from the previous year). These contracts accounted for 22% of all revised contracts (previous year, 25.3%).

Accordingly, actual new contracts (A-B+C, as defined above) totaled 3,366.

• Designated technologies total 1,539 contracts, up 4% over previous year and 62% of total

Designated technologies accounted for 1,539 contracts, up 64 (4.3%) contracts over the previous year or 61.8% of the total (61.1% of the prior year's total). In 638 contracts (down 49 contracts or 7.1% from the prior year), the yen value of the contracts exceeded ¥100 million.



Table. Comparison of New and Old Procedures for Reporting on Technology Introduction

Section			New		Old	
			Division between notification and reports		Reports	
Type	Payment		Over \$100 million	\$100 million or less	Over \$100 million	\$100 million or less
New contracts	Newly designated technologies	1. Aeronautic equipment 2. Weapons 3. Explosives 4. Nuclear power 5. Aerospace development	Notification	Reports	Not the very same day	Not the very same day
		6. Computers 7. Electronic parts for next-generation computers 8. Apparatus related to laser processing and optical communications 9. Innovative materials 10. Nonmercurous table salt electrolysis 11. Ocean bottom petroleum 12. Leather and leather products	Reports			
	Technologies other than those listed in above		Reports	Reports	Same day	Same day
Revised contracts	Including introduction of newly designated technologies		Notification	Reports	Not the very same day	Same day
	Not including introduction of newly designated technologies		Reports	Reports	Same day	Same day
	Status continued (unchanged by contract revision)		Reports	Reports	Same day	Same day

New Notification: Notification before the contract is concluded. Reports: Reports after the contract is concluded.

Old Not the very same day: Possibly the day after two weeks have elapsed from the day of notification. Very next day: Contract possible the day after the notification day.

**Table 1-2. Overview of Technology Introductions in 1991**

New contracts	Total		A	3,175	
	Designated technologies	Total		1,539	
		Payments in excess of ¥100 million	D	638	
	Actual extensions		B	73	
Revised contracts	Total	Total		1,200	
	Designated technologies	Payments in excess of ¥100 million	D	330	
			C	144	
	Revisions accompanying increase in technology			264	
	Status continued			195	
Actual new contracts				E = A - B + C	3,366

Note: The number of contracts for designated technologies and actual extensions is available only for the period April through December.

## 1.2 Status of introduction by type of technology

- Manufacturing accounts for 98.2% of the total

Table 2, a table of contracts by type of technology, shows that manufacturing accounted for 3,117 contracts (down 1.6% from the previous year) or 98.2% of the total. As for the balance, the construction industry accounted for 26 contracts (up eight contracts over the previous year), other industries for 26 contracts (up eight contracts over the previous year), and agriculture, forestry, and fishing for 6 contracts (up one contract).

(For a break-down of introducing companies by industry, see section 1.9).

- Electrical machinery and equipment increased by 0.8% and made up 63% of total

Breaking down the manufacturing industry by mid-level categories, it is revealed that electrical machinery and equipment accounted for 1988 contracts or 62.6% of the total. General machinery and apparatus accounted for 281 contracts (8.9% of total); chemical products, 201 contracts (6.3%); clothing and textile products, 165 contracts (5.2%); and other products, 89 contracts (2.8%). These five top-ranking categories account for 85.8% of the total.

**Table 2. Changes in Number of Contracts for Technology Introduction by Type of Technology (Mid-level categories)**  
(The years in the table refer to accounting years. Same below)

Technology type (mid-level categories)	1991	I	Compared to 1991 (I)	1990	1981	1986
All industries	3,175	100	-1.1	3,211	2,361	2,076
Agriculture, forestry and fisheries	6	0.2	20.0	5	7	2
Mining	0	0.0	--	1	4	1
Construction	26	0.8	44.4	18	21	18
Manufacturing industries	3,117	98.2	-1.6	3,169	2,312	2,030
Foodstuffs and tobacco	35	1.1	9.4	32	50	37
Textiles	30	0.9	-5.3	32	30	42
Clothing and textile products	165	5.2	3.8	159	227	282
Wood, wood products, furniture, etc.	10	0.3	-23.1	13	17	25
Pulp, paper products, printing	11	0.3	10.0	10	29	18
Chemical products	201	6.3	-2.9	207	210	223
Petroleum and coal products	13	0.4	18.2	11	5	5
Rubber products	13	0.4	44.4	9	11	17
Tanned leather, tanned leather products, furs	44	1.4	-8.3	48	70	63
Ceramics	31	1.0	-13.9	36	42	43
Steel	6	0.2	-14.3	7	9	11
Nonferrous metals	14	0.4	-26.3	19	18	17
Metal products	39	1.2	-11.4	44	39	49
General machinery and apparatus	281	8.9	-4.7	295	329	450
Transportation machinery	75	2.4	-6.3	80	82	78
Precision machine tools	72	2.3	9.1	66	68	72
Electric machinery and apparatus	1,988	62.6	0.8	1,972	934	448
Other products	89	2.8	-31.0	129	142	150
Other industries	26	0.8	44.4	18	17	25

A comparison of the figures for 1991 and 1990 shows that contracts in only two categories increased: clothing and textile products up the most at 3.8% and electrical machinery and apparatus at 0.8%. The other three categories declined: other products down 31.0%, general machinery and apparatus down 4.7%, and chemical products down 2.9%.

A comparison of 1991 figures with figures for 1981 (ten years earlier) and 1986 (five years earlier) shows that electrical machinery and apparatus was the only one of the top five categories to increase. By 1991 that category rose dramatically by 4.4 times the number of contracts in 1981 and 2.1 times the number of contracts in 1986. The decline was most marked in the number of contracts in category of other products. The number fell to 59% the number of contracts in 1981 and 63% of 1986. The 1991 numbers were: clothing and textile products, 59% of 1981 and 73% of 1986; general machinery and apparatus 62% of 1981 and 85% of 1986; and chemical products, 90% of 1981 and 96% of 1986. This shows that technology introduction was concentrated in the category of electrical machinery and apparatus.

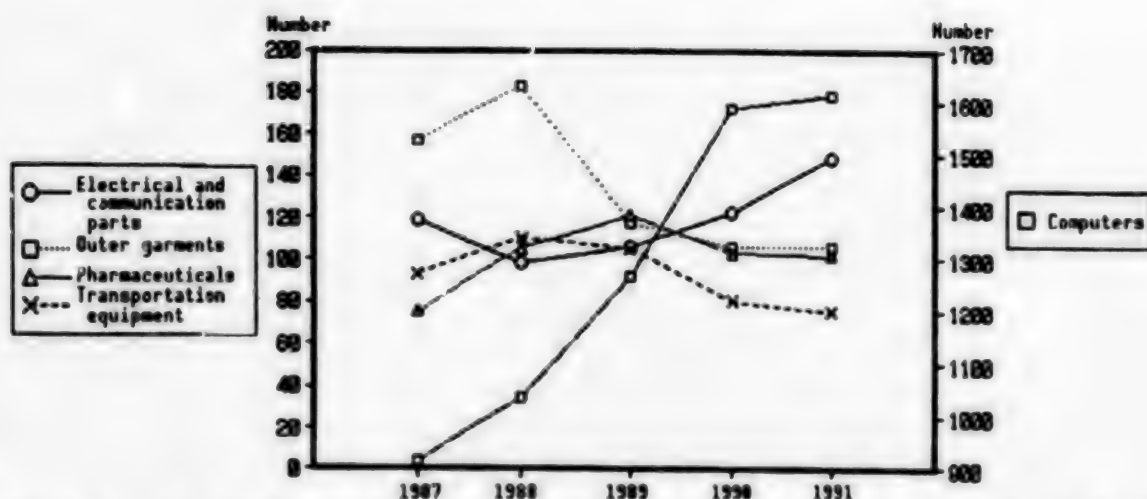


Figure 2. No. of Technology Introduction Contracts by Major Technical Field

Table 3. Changes in No. of Technology Introduction Contracts for the Five Leading Technologies (Using detailed categories)

	1991	(%)	Compared to previous year	1990	1986	1981
Computers	1,614	50.8	1.6	1,588	663	219
Electronic and communications parts	148	4.7	21.3	122	86	71
Outer garments	106	3.3	0.0	106	152	167
Pharmaceuticals	102	3.2	-1.0	103	98	77
Transportation equipment	75	2.4	-6.3	80	82	78

Table 3 shows technology introductions by more detailed categories (see note below) of technology. Computers accounted for 1,614 contracts or 50.8% of the total. Computers were followed, in descending order, by parts for electronics and communications, 148 contracts (4.7% of the total); outer garments, 106 contracts (3.3%); pharmaceuticals, 102 contracts (3.2%); and transportation machinery, 75 contracts (2.4%).

Computers account for 81.2% of electric machinery and apparatus, a mid-level category.

When the 1991 contract numbers are compared to the previous year's numbers for the top five categories, they show that electronic and communications parts rose the most at 21.3%, followed by computers at 1.6%, and no change in outer garments. Transportation equipment declined by 6.3% and pharmaceuticals by 1.0%.



A comparison of the number of 1991 technology introductions with figures for 1981 and 1986 shows that 1991 numbers for computers are 7.4 times those of 1981 and 2.4 times those of 1986, a remarkable increase. Other statistics are: electronic and communications parts, 2.1 times 1981 and 1.7 times 1986; and pharmaceuticals, 1.3 times 1981 and the same as 1986. Outer garments fell to 63% of 1981 and 70% of 1986.

- 81.8% of designated technologies contracts are in computers

In accordance with the revised Foreign Exchange Act, figures for designated technologies contracts are available only for 1 April to 31 December 1991. There were 1,259 contracts of designated technologies in computers or 81.8% of all designated technologies contracts, according to Part 2's statistical table 2-10 which is divided by detailed categories. The computer category is followed, in declining order, by electronic and communications parts, 65 contracts (4.2% of all designated technologies); and boilers and motors, 42 contracts (2.7%). Of designated technologies contracts in excess of ¥100 million, computers accounted for 421 contracts or 66.0% of the total; electronics and communications parts, 56 contracts (8.8%); and tanned leather, tanned leather products, and furs, 32 contracts (5.0%).

Note: "Detailed categories" refers to the lowest level of categories for each type of technology.

### 1.3 Status of introduction by region and by country

#### (1) Status of introduction by region

- North America accounts for 2,076 contracts, a 6.0% decline; Europe increasing

In 1991 North America accounted for 2,076 contracts or 65.4% of the total; Europe, 942 contracts (29.7%); Asia, 106 contracts (3.3%); Oceania, 29 contracts (0.9%); Africa, 11 contracts; and the Soviet Union, 6 contracts.

Compared to 1990, the number of North American contracts declined by 6.0%, while European and Asian contracts rose by 4.9% and 29.3% respectively.

#### (2) Status of introduction by country

- The United States has 2,002 contracts or 63% of the total, double the number in 1981.

Table 4 shows contracts by country. The United States's 2,002 contracts in 1991 is down from 1986, but represents 63.1% of the total. Other countries with more than 100 contracts are, in declining order: England, 213 contracts (6.7% of the total); France, 205 contracts (6.5%); Germany, 170 contracts (5.4%); and Switzerland, 102 contracts (3.2%).

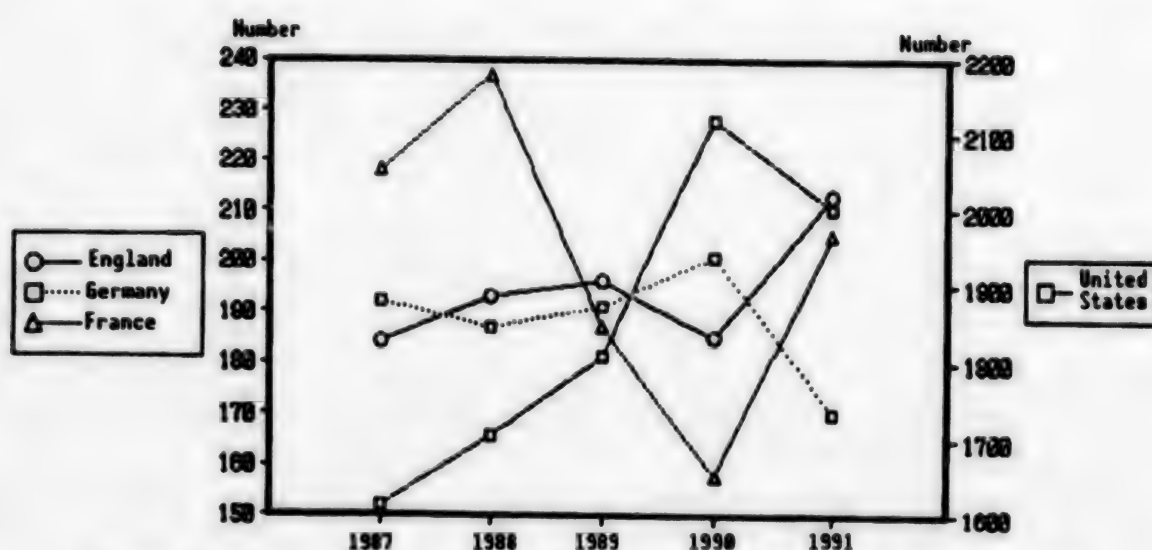


Figure 3. Changes in Number of Technology Introduction Contracts From Leading Countries

Table 4. Status of Introductions by Leading Countries

Country	1991	(%)	Compared to previous year	1990	1986	1981
United States	2,002	63.1	-5.5	2,119	1,354	977
Germany	170	5.4	-15.4	201	182	226
England	213	6.7	15.1	185	149	175
France	205	6.5	29.7	158	212	224
Switzerland	102	3.2	-3.8	106	84	89

Compared to contract numbers for 1990, French contracts increased by 29.7%, the largest increase. The number of English contracts rose 15.1%, while Germany, the United States, and Switzerland registered declines of 15.4%, 5.5%, and 3.8%, respectively.

American contracts show a rising tendency with 1991 contracts numbering twice the 1981 figures and 1.5 times the 1986 numbers. English and Swiss contracts rose or fell, depending on the year.

France has switched from a downtrend to a big increase this year and Germany switched from a trend toward recovery to a large decrease this year. Both countries' 1991 contracts are fewer than in 1981 and 1986.

- American contracts in computers number 1,231 or 2.3 times the 1981 total

Table 5 shows contract numbers by country by mid-level categories of technologies. U.S. contracts in electrical machinery and apparatus number 1,477 or 46.5% of the total, down 4.2% from the previous year. The next largest categories are general machinery and apparatus from the United States and electrical machinery and apparatus from England.

Aside from increases of 490%—the largest increase—in electrical machinery and apparatus from France and 340% in electrical machinery and apparatus from Switzerland, almost all other categories declined in every country.

**Table 5. Technology Introductions by Leading Countries in Leading Technology Categories (Mid-level categories)**

Technology category	United States	Germany	England	France	Switzerland
Electrical machinery and apparatus	1) 1,477 (729)	1) 51 (31)	1) 111 (38)	1) 59 (12)	1) 48 (14)
General machinery and apparatus	2) 147 (174)	2) 44 (51)	3) 17 (22)	4) 17 (25)	2) 12 (14)
Chemical products	3) 93 (102)	3) 23 (23)	2) 21 (23)	7) 10 ( 7)	3) 10 (14)
Clothing and textile products	7) 36 ( 51)	7) 3 ( 6)	7) 17 (14)	2) 55 (81)	4) 5 (14)
Other products	4) 43 ( 77)	5) 12 (22)	5) 7 (11)	5) 11 ( 9)	4) 5 ( 2)

Note: The numbers in parentheses are for 1986; the first number with a single parenthesis is the ranking of that technology field for that country in 1991.

**Table 6. Technology Introductions by Country for Computers**

Country	1991	(%)	Compared to previous year	1990	1986
United States	1,231	76.3	-2.6	1,264	537
England	101	6.3	26.3	80	28
Canada	51	3.2	-5.6	54	13
France	48	3.0	84.6	26	7
Singapore	46	2.9	17.9	39	29
Total	1,614	100.0	1.6	1,588	663

Note: The numbers for Germany include pre-unification East Germany.

Table 6 shows country-specific numbers for computers in the leading countries. The United States dominated with 1,231 contracts (76.3% of the total), followed by England, Canada, and France. France showed the biggest increase—84.6%—over 1990, followed by England at 26.3% and Singapore at 17.9%.

Compared to contract numbers for 5 years ago, France registered the biggest increase, 690%, followed by Canada at 390% and England at 360%.

#### 1.4 Status of introduction by field of high technology

There is no clear definition of "high technology." This section focuses on areas of recent interest including: computers (hardware, software, services), semiconductors, nuclear power, aeronautics and aerospace, pharmaceuticals, and biotechnology. With great reluctance, robotics and new materials have not been

included as high technology because they cut across technologies and cannot be separated out.

- Focus on software: 1,552 contracts account for 48% of total contracts and have increased eight-fold over ten years ago

Table 7 shows the status of the introduction of leading technologies for 1991. Software accounts for 1,522 contracts or 47.9% of total contracts, followed by semiconductors at 261 contracts (8.2% of total), hardware at 120 contracts (3.8%), nuclear power at 85 contracts (2.7%), pharmaceuticals at 72 contracts (2.3%), aeronautics and aerospace at 46 contracts (1.4%) and biotechnology at 24 contracts (0.8%).

Table 7. Status of Introduction of Leading Technologies

Field of high technology	1991	(%)	Compared to previous year	1990	1986	1981
Computers	1,664	52.4	1.3	1,642	699	224
Hardware	120	3.8	12.1	107	97	30
Software	1,522	47.9	0.2	1,519	597	192
Services	22	0.7	37.5	16	5	2
Semiconductors	261	8.2	5.7	247	171	36
Nuclear power	85	2.7	-3.4	88	56	63
Aeronautic and aerospace	46	1.4	17.9	39	45	22
Pharmaceuticals	72	2.3	-10.0	80	97	54
Biotechnology	24	0.8	-7.7	26	21	17



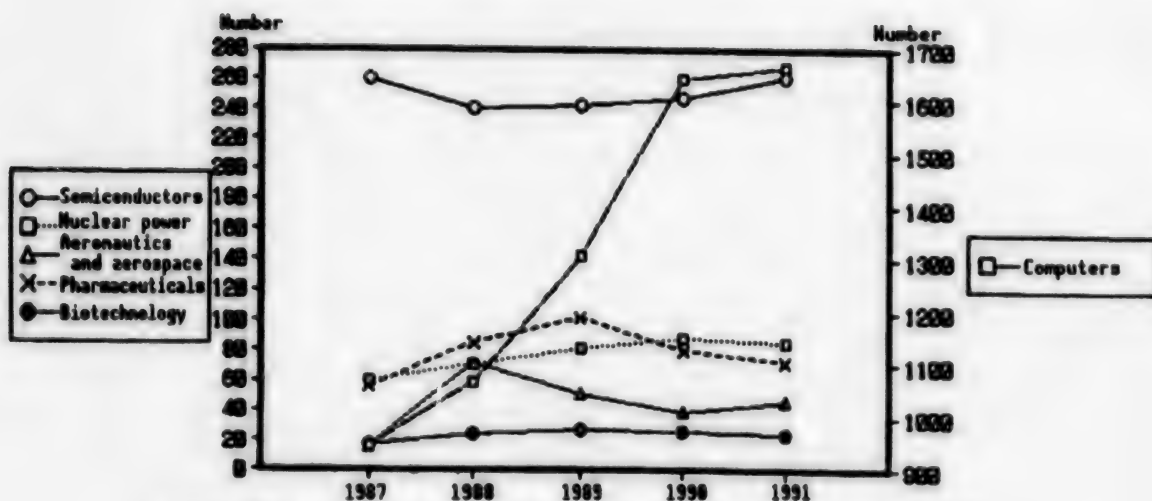


Figure 4. Trends in Introduction of High Technology

When the five leading technologies' 1991 numbers are compared to 1990, the results are: hardware up 12.1%, the largest increase, semiconductors up 5.7%, software up 0.2%, and pharmaceuticals down 10.0%.

The number of software contracts in 1991 was 7.9 times the number in 1981 and 2.5 times the number in 1986—the largest increases. For the other four technologies the numbers were: semiconductors, 7.3 times 1981 and 1.5 times 1986; hardware, 4.0 times 1981 and 1.2 times 1986; nuclear power, 1.3 times 1981 and 1.5 times 1986; and pharmaceuticals, 1.3 times 1981 and 74% of 1986.

#### 1.5 Revenues and expenditures from technology trade

- Ratio of revenues to expenditures from technology trade was 0.46

In 1991 Japan's expenditures on technology trade (based on actual results) amounted to \$6.493 billion (up 8.1% over 1990), according to figures in the Bank of Japan's "International revenues and expenditures statistical monthly." (See Table 8).

Revenues received from technology exports (based on actual results) in 1991 totaled \$2.984 billion (up 15.6% over 1990). As a result, the ratio of revenues to expenditures on technology trade was 0.460, up 7.0% over 1990.

Expenditures reached 3.8 times those of 1981, while revenues reached 5.6 times 1981, so the revenues to expenditures ratio increased to 1.46 times the 1981 amount.

Expenditures reached 1.9 times those of 1986, while reached 3.0 times 1986, so the revenues to expenditures ratio increased to 1.54 times the 1981 amount.

**Table 8. Shifts in Technology Trade**

Year	Technology trade figures		
	Revenues (A)	Expenditures (B)	A/B
	(million dollars)	(million dollars)	(%)
1950	0.0	2.6	—
1951	0.0	6.7	—
1952	0.0	9.9	—
1953	0.1	13.9	0.7
1954	0.4	15.8	2.5
1955	0.2	20.0	1.0
1956	0.3	33.3	0.9
1957	0.2	42.6	0.5
1958	0.7	47.8	1.5
1959	0.8	61.9	1.3
1960	2.3	94.9	2.4
1961	3	113	2.7
1962	7	114	6.1
1963	7	136	5.1
1964	15	156	9.6
1965	17	166	10.2
1966	19	192	9.9
1967	27	239	11.3
1968	34	314	10.8
1969	46	368	12.5
1970	59	433	13.6
1971	60	488	12.3
1972	74	572	12.9
1973	88	715	12.3
1974	113	718	15.7
1975	161	712	22.6
1976	173	846	20.4
1977	233	1,027	22.7
1978	274	1,241	22.1
1979	342	1,260	27.1
1980	378	1,439	26.3
1981	537	1,711	31.4
1982	527	1,796	29.3
1983	624	2,079	30.0
1984	693	2,317	29.9
1985	746	2,522	29.6
1986	1,009	3,375	29.9
1987	1,385	4,177	33.2
1988	1,681	5,076	33.1
1989	2,189	5,455	40.1
1990	2,582	6,004	43.0
1991	2,984	6,493	46.0

Note: About data on revenues and expenditures from technology trade.

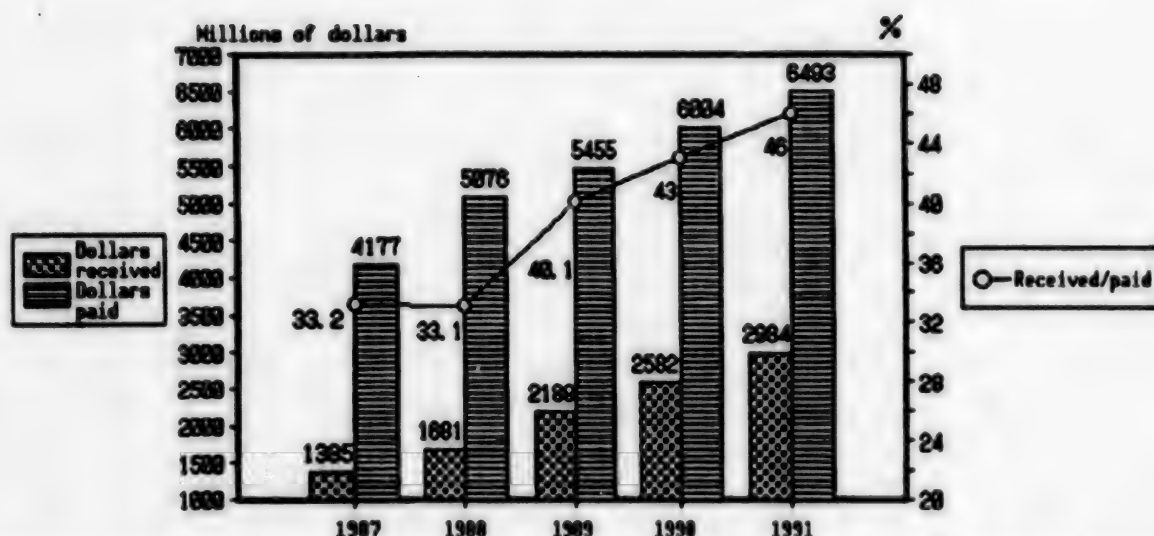


Figure 5. Changes in Revenues and Expenditures in Japan's Technology Trade  
Source: *International Revenues and Expenditures Monthly*

Data on revenues and expenditures from technology trade is available, not only from the Bank of Japan's "International revenues and expenditures," but also from the "Survey report on science and technology research" of the Statistics Bureau of the Prime Minister's Office. According to the report, in fiscal year 1991 technology exports were ¥370.6 billion and imports were ¥3.947, making for a technology trade ratio of 0.94.

There is quite a difference between the Bank of Japan and Prime Minister's Office 1991 figures, even when figures are adjusted to the average interbank central market rate for the last month of the year (an exchange rate of \$1 = ¥133.18). The adjusted numbers are ¥397.4 for exports and ¥864.7 for imports.

The discrepancies in trade figures and trade ratios are examined in detail by the Policy Institute's survey and research material number 26, "An attempt at quantitative analysis of Japan's technology trade statistics and revenue and expenditure statistics. The reasons are summarized briefly in the charts below, while the major points of disagreement are summarized in the table below.

Bank of Japan  
statistic  
(Approximately  
¥400 billion)

Wholesale	Agricultural, marine and forestry industry	Plant export
Retail	Mining	
Service industry	Construction industry	
Individuals	Manufacturing industry	
Universities	Transportation, communications and public industries (Approximately ¥350 billion)	
Research institutions		
Private companies with capital of ¥5 million or less		
Trademark Design		
(Approximately ¥50 billion)		

Prime Minister's  
Office statistic  
(Approximately  
¥370 billion)

← (Approximately  
¥20 billion)

Export volume

Bank of Japan  
statistic  
(Approximately  
¥860 billion)

(Approximately  
¥210 billion) →

Wholesale	Agricultural, marine and forestry industry
Retail	Mining
Service industry	Construction industry
Individuals	Manufacturing industry
Universities	Transportation, communications and public industries (Approximately ¥390 billion)
Research institutions	
Trademark Design	Private companies, etc., with capital of ¥5 million or less
(Approximately ¥100 billion)	
(Approximately ¥160 billion)	

Prime Minister's  
Office statistic  
(Approximately  
¥390 billion)

Import volume



**Table. Major points of disagreement between the two sets of statistics**

	<b>Bank of Japan (International revenues and expenditures)</b>	<b>Prime Minister's Office "Survey report on science and technology research"</b>
<b>Survey method</b>	Cumulative statistics from foreign expenditures reports submitted to the Bank of Japan at the time of exchanging and remitting money and at the time that money is paid	Survey by mail 1) survey of all by mail (companies with capital of ¥1 billion or more; companies with capital less than ¥1 billion, but which conducted R&D according to the previous year's survey) 2) Survey of a sampling of companies with capital less than ¥1 billion
<b>Scope of survey</b>	Bodies (people, corporation, the country, etc.) finalizing foreign trade transaction contracts with nonresidents (people and corporations outside Japan)	Private companies with capital of ¥5 million or more
<b>Outside the scope of the survey</b>	Nothing	1) Wholesale, retail, and service industries 2) Private corporations with capital of less than ¥5 million 3) Universities, research institutes (national, public, and private), other special purpose corporations specializing in research, individuals
<b>Statistical value sought</b>	Numerical value of "patent right usage fees etc" entered as items of international revenues and expenditures in report on expenditures for foreign trade	Numbers entered in the "technology exports" and "technology exports" columns on survey questionnaires
<b>Scope of technology trade</b>	1) Transfer of rights or establishment of usage rights for industrial ownership rights (patents, utility models, designs, trademarks) and know-how 2) Guidance on factory management or on business management 3) Not included: items relating to plant exports	1) Providing or receiving of technology such as patents, utility models, know-how, and technical guidance 2) Not included: trademarks and designs 3) Not included: guidance on factory management or on business management

## **1.6 Types of technology introduced**

**See Part 2, Statistical tables 2-4**

### **Content of technology introductions**

#### **Contracts related to patents**

• Almost all contracts related to patents level off, "electrical machinery and apparatus" at 43%

In 1991 contracts related to patents (including applications) numbered 769 or 24.2% of total contracts introducing new technology. That figure is down 0.6% from the previous year and up 1.1 times the level of five years ago. (See Table 9).

Looking at mid-level categories: electrical machinery and apparatus totaled 333 contracts or 43.3% of total contracts related to patents, followed by chemical products at 117 contracts or 15.2% of total contracts related to patents, and general machinery and apparatus at 116 contracts or 15.1% of total contracts related to patents.

Compared to the previous year's contracts, electrical machinery and apparatus was down 0.89%; chemical products, down 5.6%, and general machinery and apparatus, down 9.4%.

Patent-related contracts account for the following percentage of contracts in their respective technology categories: chemical products, 58.2%; general machinery and apparatus, 41.3%; electrical machinery and apparatus, 16.8%.

Electrical machinery and apparatus contracts amount to 1.6 times the five year earlier figure; chemical products amount to 1.1 times, and general machinery and apparatus amount to .74 times.

#### **Contracts related to know-how**

• Know-how related contracts on the rise, 1.3 times as many as five years ago

There were 2,603 contracts related to know-how, accounting for 82.0% of the total. There was an increase of 2.1% over the previous year. The 2,603 contracts amount to 1.3 times the five year earlier figure. (See Table 10).

In terms of mid-level categories, electrical machinery and apparatus accounted for 1,849 contracts and 71.0% of total know-how related contracts, followed by general machinery and apparatus at 251 contracts (9.6% of total know-how related contracts), and chemical products at 154 contracts (5.9% of total know-how related contracts)

**Table 9. Number of Contracts Related to Patents by Field of Technology  
(Mid-level categories)**

Field of technology	1991	Total patent- related contracts (%)	Compared to previous year (%)	1990	1986
Electrical machinery and apparatus	333	43.3	-0.9	336	207
Chemical products	117	15.2	-5.6	124	111
General machinery and apparatus	116	15.1	-9.4	128	156
<b>Total</b>	<b>769</b>	<b>100.0</b>	<b>-0.6</b>	<b>774</b>	<b>686</b>

**Table 10. Number of Contracts Related to Know-how by Field of Technology  
(Mid-level categories)**

Field of technology	1991	Total patent- related contracts (%)	Compared to previous year (%)	1990	1986
Electrical machinery and apparatus	1,849	71.0	2.8	1,798	796
General machinery and apparatus	251	9.6	-4.2	262	294
Chemical products	154	5.9	-6.7	165	166
<b>Total</b>	<b>2,603</b>	<b>100.0</b>	<b>2.1</b>	<b>2,549</b>	<b>1,961</b>

**Table 11. Number of Contracts Related to Trademarks by Field of Technology  
(Mid-level categories)**

Field of technology	1991	Total patent- related contracts (%)	Compared to previous year (%)	1990	1986
Clothing and textile products	164	32.0	3.1	159	172
General machinery and apparatus	65	12.7	27.5	51	52
Chemical products	44	8.6	25.7	35	58
<b>Total</b>	<b>513</b>	<b>100.0</b>	<b>-0.2</b>	<b>514</b>	<b>551</b>

### Contracts related to trademarks

• Contracts related to trademarks decline; contracts related only to trademarks are 2.2 times the number in 1986

Contracts accompanying trademark rights (including trademarks in application) amounted to 513 or 16.2% of total contracts. (See Table 11).

When such contracts are divided by mid-level categories, clothing and textile products' 164 contracts account for 32.0% of trademark-related contracts, followed by electrical machinery and apparatus at 65 contracts (12.7%), and chemical products at 44 contracts (8.6%).

Compared to the previous year, electrical machinery and apparatus rose 27.5%; chemical products, 25.7%; and clothing and textiles, 3.1%.

Trademark-related contracts accounted for the following percentage of total contracts in the following technical areas: clothing and textile products, 99.4%; chemical products, 21.9%; and electrical machinery and apparatus, 3.3%. Compared to the number of technology introductions in 1986, electrical machinery and apparatus rose to 1.3 times the 1986 figure, clothing and textile products declined to 95% of the 1986 figure, and chemical products declined to 75% of the 1986 figure.

There were 361 contracts related only to trademarks. They represented 11.4% of total contracts, a decline of 11.3% compared to the previous year, and 2.2 times the 1986 figure. Clothing and textile products rose 3.9 times compared to five years earlier, and tanned leather, tanned leather products, and furs rose 2 to 2.7 times the 1986 figure.

### Introduction of uncommercialized technology

In 1991 there were 1,467 introductions of uncommercialized technology, technology which the grantor hadn't commercialized. This is an increase of 8.2% over the previous year.

Electrical equipment and apparatus accounted for 1,086 contracts, an increase of 99 contracts (10.0%) over the previous year. These contracts accounted for 74.0% of uncommercialized contracts.

As shown in the table below, general machinery and apparatus had 81 contracts (up 6.6% over the previous year, chemical products had 80 (up 27.0%), clothing and textile products had 55 (down 1.8%), and other products had 29 (down 37.0%).

Note: With the 1991 revision of the Foreign Exchange Law, reports on uncommercialized technology have ceased, so data is only available from April to December. This data is compared to data for the same period of 1990.



**Table. Uncommercialized Technology**

Field of technology	1991	Comparison to previous year (%)	1990
Electrical equipment and apparatus	1,086	10.0	987
General machinery and apparatus	81	6.6	76
Chemical products	80	27.0	63
Clothing and textile products	55	-1.8	56
Other products	29	-37.0	46

**1.7 Characteristic terms of contracts**

**Terms for payment of compensation (See Part 2, Statistical tables 2-5)**

- Gratuitous contracts number 205, up 12.6% over previous year

In 1991 gratuitous contracts for technology introduction numbered 205 or 6.5% of the total, up 12.6% over the previous year. By technology category, numbers of contracts and their increase/decrease compared to the previous year were: electrical equipment and apparatus, 136 (up 33.3%, a large increase); chemical products, 21 (down 25.0%); other products, 13 (up 18.2%).

Contracts requiring compensation numbered 2,970 or 93.5% of the total, down 1.9% from the previous year.

- Contracts requiring only initial payment account for 43.2%

Of contracts requiring payment, those requiring only an initial payment numbered 1,371 or 43.2% of total contracts, an increase of 1.2% over the previous year (see Table 12).

**Table 12. Terms for Payment of Compensation**

Compensation terms	1991	(%)	Change from previous year	1990
Initial payment only	1,371	43.2	1.2	1,355
Initial payment plus running royalty	646	20.3	-12.3	737
Running royalty only	559	17.6	3.3	541
Running royalty plus minimum	260	8.2	-5.1	274
All three kinds of payments	134	4.2	9.8	122

**Table 13. Compensation Terms for Top Five Technology Categories**

Terms for payment of compensation	Electrical machinery and apparatus	General machinery and apparatus	Chemical products	Clothing and textile products	Other products
Initial payment only	1,047 (1,025)	122 (124)	61 (47)	19 (24)	17 (25)
Initial payment plus running royalty	422 ( 461)	84 ( 78)	59 (63)	3 ( 3)	14 (27)
Running royalty only	302 ( 319)	53 ( 52)	41 (40)	27 (26)	18 (23)
Running royalty plus minimum	35 ( 28)	5 ( 7)	5 ( 8)	101 (93)	21 (36)
All three kinds of payments	46 ( 37)	25 ( 20)	14 (21)	14 ( 6)	6 ( 7)

Note: The numbers within parentheses are numbers for the previous year, 1990.

By technology category (see Table 13), numbers of initial payment only contracts and their increase/decrease compared to the previous year were: electrical machinery and apparatus (the largest category), 1,047 contracts (up 2.1%); general machinery and apparatus, 122 (down 1.6%); and chemical products, 61 (up 29.8%).

This kind of contract accounted for the following percentage of total contracts in the following technology categories: electrical equipment and apparatus, 52.7%; general equipment and apparatus, 43.4%; and chemical products, 30.3%.

Contracts with initial payment plus running royalty numbered 646 or 20.3% of total contracts and declined 12.3% from the previous year.

By technology category, numbers of initial payment plus running royalty contracts and their increase/decrease compared to the previous year were: electrical machinery and apparatus, 422 (down 8.5%); general equipment and apparatus, 64 (down 17.9%); and chemical products, 59 (down 6.3%).

Contracts with running royalties only numbered 559 or 17.6% of total contracts, up 3.3% over the previous year.

By technology category, numbers of running royalty contracts and their increase/decrease compared to the previous year were: electrical machinery and apparatus, 302 (down 5.3%); general machinery and apparatus, 53 (up 1.9%); and chemical products, 41 (up 2.5%).

Running royalty payment plus minimum payment contracts numbered 260 or 8.2% of total contracts, down 5.1% from the previous year.

By technology category, numbers of running royalty plus minimum payment contracts and their increase/decrease compared to the previous year were: clothing and textile products (the biggest category), 101 (up 8.6%); electrical machinery and apparatus, 35 (up 25.0%); and other products, 21 (down 41.7%).

Initial payment plus running royalty payment plus minimum payment contracts numbered 134 or 4.2% of total contracts (up 9.8%).

• Running royalty contracts calling for "other" rate of running royalty payment account for 49.3%

Contracts including running royalties numbered 1,599 or 50.4% of total contracts. This number is down 4.5% compared to the previous year and up 1.2 times the figure of five years earlier.

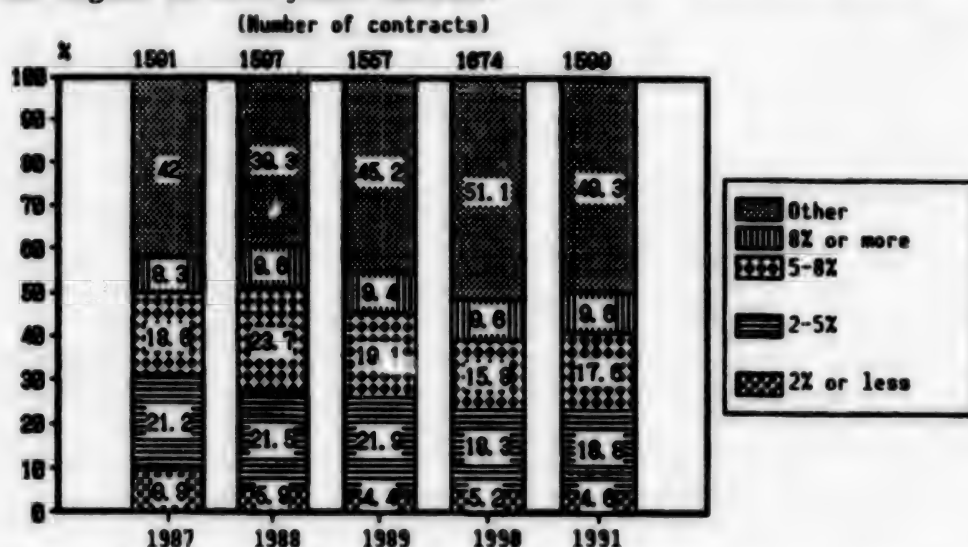


Figure 6. Shifts in Running Royalties  
(Figures are expressed as percentage of contracts with running royalties)

Table 14 shows how these contracts are divided by rate of royalty payment. "Other" (see note at end of this section) rate of payment contracts accounted for 49.3% of these contracts, followed by: "2-5%," 301 contracts (18.8% of these contracts); "5-8%," 282 (17.6%); "8% or more," 154 (9.6%); and "less than 2%," 74 (4.6%).

Compared to 1990, the previous year, "5-8%" rose 6.8%, while all other categories declined.

The following categories rose to the following percentage of the five year earlier contract numbers: "other," 190%; and "8% or more," 120%. The following categories declined to the following percentage of the five year earlier contract numbers: "less than 2%" and "5-8%," 77%; and "2-5%," 84%.

By technology category, the numbers of contracts in the most popular fee ranges for their category and their increase/decrease compared to the previous year were: electrical machinery and apparatus, "other," 586 contracts (down 11.3%) accounting for 72.8% of running royalty contracts in this technology field; general machinery and apparatus, "other," 59 (unchanged); chemical products, "2-5%," 49, (up 22.5%); and clothing and textile products, "5-8%," up 53.7%.

Note: The "other" rate refers to rates not based on percentages, such as a per-item fee.

**Table 14. Status of Running Royalties**

Royalty rate	1991	(%)	Change compared to previous year (%)	1990	1986
Less than 2%	74	4.6	-15.9	88	96
2-5%	301	18.4	-1.6	306	360
5-8%	282	17.6	6.8	264	364
8% or more	154	9.6	-3.8	160	127
Other	788	49.3	-7.9	856	421
Total	1,599	100.0	-4.5	1,674	1,368

**Table 15. Running royalties by mid-level technology categories**

Royalty rate	Electrical machinery and apparatus	General machinery and apparatus	Chemical products	Clothing and textile products
Less than 2%	30 (-14.3)	15 (150.0)	6 (-50.0)	0 ( — )
2-5%	83 ( 22.1)	38 (-22.4)	49 ( 22.5)	35 ( 9.4)
5-8%	22 ( 10.0)	29 ( -9.4)	27 (-20.6)	83 ( 53.7)
8% or more	84 ( 37.7)	6 (-45.5)	14 ( 7.7)	12 (-42.9)
Other	586 (-11.3)	59 ( 0.0)	23 (-30.3)	15 ( 25.0)
Total	805 (- 4.7)	147 ( -6.4)	119 ( -9.8)	145 ( 13.3)

Note: Number in parentheses is a percentage comparison to the previous year.

Contract period (See Part 2, Statistical tables 2-7).

• "Other" contract length for 41.6% of contracts

Of 3,175 technology introduction in fiscal year 1991, 41.6% had "other" as the period of their contract (see Table 16). For other technology categories, the term of contracts and their number and percentage of total contracts were (in order of number of contracts): "1-5 years," 791 contracts (24.9% of total contracts); "5-10 years," 368 (11.6%); "For term of patent," 290 (9.1%); "10-15 years," 224 (7.1%); "Less than 1 year," 121 (3.8%); and "15 years or more," 61 (1.9%).

The following categories rose by the following percentages compared to the previous year: "10-15 years," up 5.2%; "Other," up 0.4%; and "5-10 years" and "For term of patent," up 0.3%. The following categories declined by the following percentages compared to the previous year: "Less than 1 year," down 16.0%; "15 years or more," down 15.3%; and "1-5 years," down 2.5%.



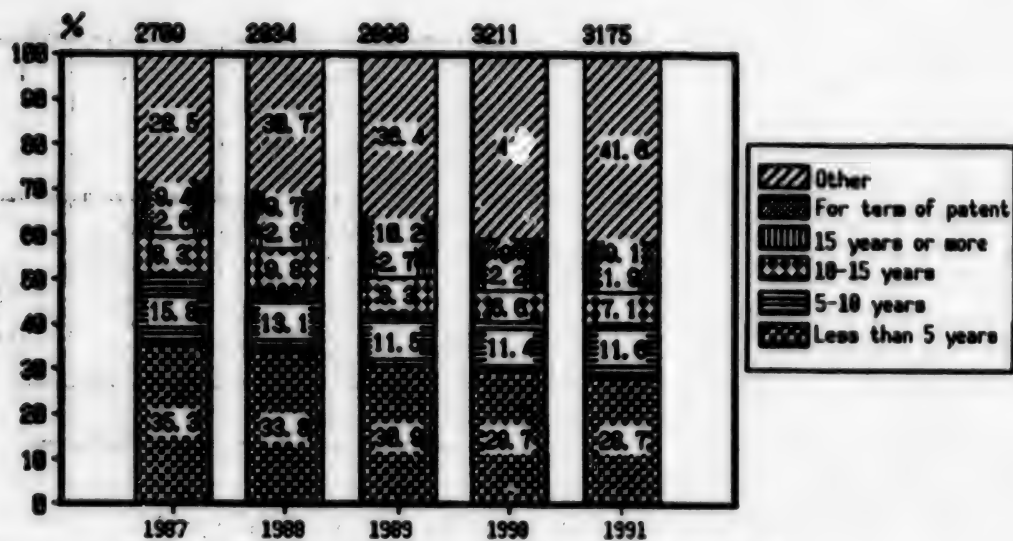


Figure 7. Shift in Contract Period

Table 16. Status of Contract Term

Type of contract term	1991	(%)	Change compared to previous year (%)	1990	1986
Less than 1 year	121	3.8	-16.0	144	136
1-5 years	791	24.9	-2.5	811	728
5-10 years	368	11.6	0.3	367	353
10-15 years	224	7.1	5.2	213	272
15 years or more	61	1.9	-15.3	72	71
For term of patent	290	9.1	0.3	289	216
Other	1,320	41.6	0.4	1,315	585

Table 17. Contract Term by Mid-Level Technology Category

Type of contract term	Electrical machinery and apparatus	General machinery and apparatus	Chemical products	Clothing and textile products
Less than 1 year	61 (-9.0)	22 (-12.0)	10 ( 0.0)	8 (-55.6)
1-5 years	408 (-1.2)	71 ( -5.3)	27 (-15.6)	111 ( 14.4)
5-10 years	166 (-0.6)	43 (-33.8)	28 ( 64.7)	32 ( 33.3)
10-15 years	85 ( 7.6)	47 ( -2.1)	18 (-14.3)	6 (500.0)
15 years or more	23 (76.9)	2 (-75.0)	10 (-50.0)	- ( — )
For term of patent	161 ( 4.5)	36 ( 50.0)	41 (-12.8)	- ( — )
Other	1,084 ( 0.5)	60 ( 20.0)	67 ( 11.7)	8 (-52.9)

Note: Number in parentheses is a percentage comparison to the previous year.

Contracts with unspecified terms doubled compared to five years earlier, a large increase.

Looking at contract term by mid-level technology categories (see Table 17), in the electrical machinery and apparatus category, "Other" accounted for the largest number of contracts at 1,084 contracts (up 0.5% over the previous year) or 54.5% of total contracts in this technology category. The most popular contract terms for the following technology categories accounted for the following number of contracts and registered the following rises or declines compared to the previous year: general machinery and apparatus, "1-5 years," 71 contracts (down 5.3% compared to the previous year); chemical products, "other," 67 (up 11.7%); and clothing and textile products, "1-5 years," 111, (up 14.4%).

Note: "Other" refers to contracts such as those in which contract term is: not set, forever, or for the length of another contract.

### 3. Sales Territory

- "Japan only" accounts for 61.8% of total, up 5.5% over previous year

A sales territory of "Japan only" (no exports allowed) numbered 1,541 and accounted for 61.8% of total new technology introduction contracts (see Table 18). The following sales territories accounted for the following number of contracts and percentage of total contracts: "Worldwide" (no restriction), 689 (27.6% of total contracts); "Other" (specified countries or regions), 139 (5.6%); "Throughout Asia," 100 (4.0%); "Korea and Taiwan," 22 (0.9%); and "United States and Europe," 1 (0.0%).

Compared to the previous year, "Japan only" rose 5.5%, "Throughout Asia" rose 4.2%; and "Worldwide" rose 2.1%.

Comparing markets, "Japan only" and "Worldwide" rose to 160% of the five year earlier figures. The others declined.

Looking at markets by technology category (see Table 19), "Japan only" accounted for 953 contracts (up 8.8% over previous year) or 60.7% of contracts in the category of electrical machinery and apparatus. "Worldwide" accounted for 537 contracts (up 4.5% over previous year) or 34.2% of contracts in the category of electrical machinery and apparatus. In the category of general machinery and apparatus, there were 111 Japan only contracts followed by 35 Asia contracts. In chemical products there were 97 Japan only contracts and 31 worldwide.

Note: Since this information is not collected under the new Foreign Exchange Law, the figures are for April to December of the fiscal year.

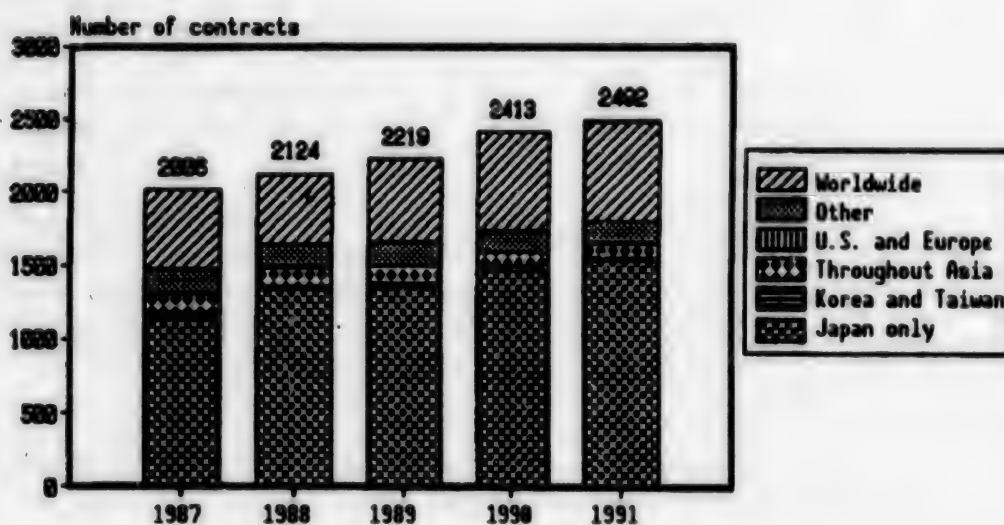


Figure 8. Changes in Export Market  
(Numbers are for April to December only)

Table 18. Status of Export Market

Type of export market limit	1991	(%)	Change compared to previous year (%)	1990	1986
Japan only	1,541	61.8	5.5	1,460	984
Korea and Taiwan	22	0.9	-35.3	34	36
Throughout Asia	100	4.0	4.2	96	128
U.S. and Europe	1	0.0	-75.0	4	2
Worldwide	689	27.6	2.1	675	443
Other	139	5.6	-3.5	144	184

Note: Numbers for each year are only for the period April to December

Table 19. Export Market Limits by Mid-Level Technology Categories

Export market limits	Electrical machinery and apparatus	General machinery and apparatus	Chemical products	Clothing and textile products
Japan only	953 ( 8.8)	111 ( -5.1)	97 ( 27.6)	112 ( 13.1)
Korea and Taiwan	4 (-20.0)	8 (-20.0)	4 (-55.6)	1 (-80.0)
Throughout Asia	19 ( 58.3)	35 ( 0.0)	7 ( 0.0)	8 (-33.3)
U.S. and Europe	0 ( - )	0 ( — )	1 ( — )	0 ( — )
Worldwide	537 ( 4.5)	32 (-11.1)	31 (-31.1)	0 ( — )
Other	56 ( 14.3)	29 ( 7.4)	20 ( 11.1)	1 (-75.0)

Note: Numbers inside parentheses are percentage comparisons to the previous year only for the period April to December.

#### 4. Exclusive Rights in Japan

• Exclusive rights contracts make up 37% of total contracts and have risen to 250% of the five year earlier figure in electrical machinery and apparatus.

In 1991, contracts granting exclusive rights within in Japan totaled 1,170 or 36.9% of total contracts, a decline of 1.5% compared to the previous year, but 1.1 times the five year earlier figure.

Looking at contracts by mid-level technology category (see Table 20), electrical machinery and apparatus' exclusive rights contracts numbered 531 or 45.4% of total exclusive rights contracts followed by clothing and textile products at 150 contracts (12.8% of total exclusive rights contracts), general machinery and apparatus at 121 (10.3%), and chemical products at 79 (6.8%).

Compared to the previous year, exclusive rights contracts changed at the following rates in the following technology categories: clothing and textile products, up 15.4%; electrical machinery and apparatus, up 2.3%; and general machinery and apparatus, down 4.7%.

Compared to five years ago, the number of exclusive rights contracts declined in all categories except for electrical machinery and apparatus which grew to 2.5 times the earlier number.

Table 20. Changes in Exclusive Rights by Mid-Level Technology Category

Technology category	1991	(%)	Compared to previous year (%)	1990	1986
Electrical machinery and apparatus	531	45.4	2.3	519	214
General machinery and apparatus	121	10.3	-4.7	127	165
Chemical products	79	6.8	-24.8	105	101
Clothing and textile products	150	12.8	15.4	130	195
Total	1,170	100.0	-1.5	1,188	1,043

#### 5. Cross-Licensing Contracts

• Cross-licensing contracts number 122

During 1991, 122 contracts (3.8% of total contracts for introduction of new technology) were contracts for both the import and export of technology. This number is up 37.1% over the previous year and is 1.5 times the five year earlier figure.



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**Table 21. Changes in Cross-Licensing by Mid-Level Technology Category**

Technology category	1991	(%)	1990	1986
Electrical machinery and apparatus	78	63.9	54	37
General machinery and apparatus	12	9.8	9	19
Chemical products	5	4.1	9	12
Total	122	100.0	89	82

**6. Technology introductions accompanying stock acquisition**

• Thirteen stock acquisitions

When foreign corporations' investment in Japan and participation in management through stock acquisition is accompanied by technology introductions, this is referred to as technology introductions accompanying stock acquisition.

The 15 technology introductions accompanying stock acquisition during April to December of fiscal year 1991 declined by two from the previous year and made up 46% of the five year earlier figure.

The breakdown by mid-level technology category (see Table 22): general machinery and apparatus and electrical machinery and apparatus, five each (38.5% each of such cases); chemical products, two; and nonferrous metals, one.

**Table 22. Changes in Technology Acquisitions Accompanying Stock Acquisition by Mid-Level Technology Category**

Technology category	1991	(%)	1990	1986
Electrical machinery and apparatus	5	38.5	2	9
General machinery and apparatus	5	38.5	2	5
Chemical products	2	15.4	6	3
Nonferrous metals	1	7.7	0	0
Total	13	100.0	15	28

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## 7. Re-implementation rights

- Re-implementation right contracts number 1,042, up 2% over previous year

Contracts granting re-implementation rights—the rights to transfer the introduced technology to a third party—numbered 1,042 in 1991 or 32.8% of total contracts. This number is up 2.5% over the previous year and is 1.4 times the five year earlier figure.

By mid-level technology category (see Table 23), electrical machinery and apparatus accounted for 620 re-implementation contracts or 59.5% of total re-implementation contracts, followed by: clothing and textile products, 94 contracts; general machinery and apparatus, 80; and chemical products, 64.

The following categories increased by the following amount over year-earlier figures: clothing and textile products, 23.7%; general machinery and apparatus, 6.7%; and electrical machinery and apparatus, 6.5%.

As for changes in the number of re-implementation contracts compared to five years earlier in these top four categories, electrical machinery and apparatus rose to 250% of the earlier figure, chemical products stayed the same, and the other two categories declined.

Table 23. Changes in Re-implementation Contracts by (Mid-Level) Technology Category

Technology category	1991	(%)	Compared to previous year (%)	1990	1986
Electrical machinery and apparatus	620	59.5	6.5	582	251
Clothing and textile products	94	9.0	23.7	76	117
General machinery and apparatus	80	7.7	6.7	75	105
Chemical products	64	6.1	-28.1	89	64
Total	1,042	100.0	2.5	1,017	734

## 8. Introductions by capital

- Capital levels at two extremes

Companies with capital of ¥50 billion or more accounted for 1,004 contracts or 31.6% of all new technology introductions in 1991 (see Table 24), followed by companies with capital of: ¥10-50 billion, 570 contracts (18.0% of total contracts); ¥100-500 million, 516 (16.3%); ¥1-5 billion, 300 (9.4%); and the categories of ¥50 million or less and ¥50-100 million, each at the same level of 268 (8.4%).

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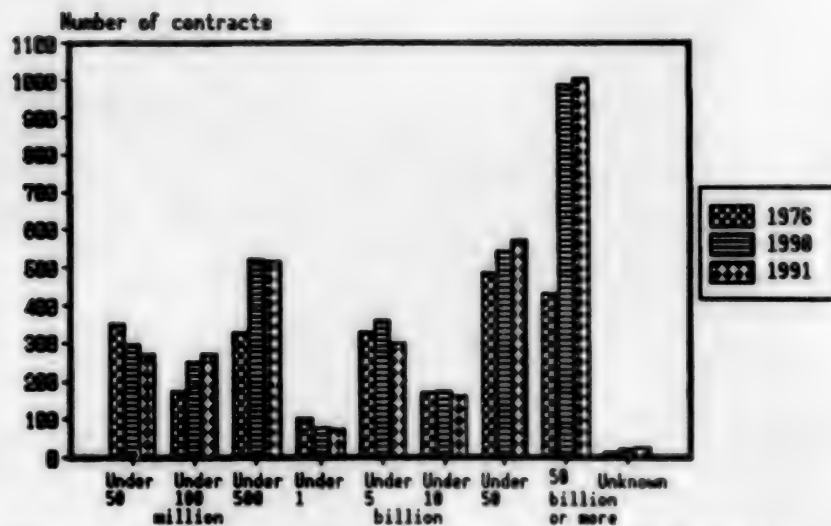


Figure 9. Number of Contracts by Level of Capital

Table 24. Changes in Technology Introductions by Level of Capital

Level of capital	1991	(%)	Compared to previous year (%)	1990	1986
V50 million or less	268	8.4	-9.5	296	347
V50-100 million	268	8.4	8.1	248	170
V100-500 million	516	16.3	-0.4	518	326
V500 million-V1 billion	68	2.1	-8.1	74	99
V1-5 billion	300	9.4	-16.0	357	325
V5-10 billion	158	5.0	-8.1	172	166
V10-50 billion	570	18.0	5.2	542	484
V50 billion or more	1,004	31.6	1.9	985	431
Unknown	23	0.7	21.1	19	13

Note: "Unknown" refers to entities such as foundations, corporations, public organizations, educational organizations, special corporations and individuals.

The largest increase in contracts over the previous year was 8%, registered by companies with capital of V50-100 million, followed by: V10-50 billion, up 5.2%; and V50 billion, up 1.9%. Contracts to companies with capital of V1-5 billion fell by 16.0%.

1991 figures for the following categories came in at the following percentages of five year earlier figures: V50 billion or more, 230% of the five year earlier figure; V50-100 million and V100-500 million, each 160%; and V10-50 billion, 120%.

Looking at mid-level technology categories (see Table 25), for electrical machinery and equipment, the largest category of capital was: V50 billion or more at 751 contracts or 37.8% of contracts in that technology category, followed by V100-500 million at 376 contracts or 18.9% of contracts in the same category. Compared to the previous year, contracts for companies with capital of V10-50 billion registered an increase of 21.4%, the biggest increase, followed by: V50-100 million, up 14.1%, and V50 billion and above, up 4.0%. In general machinery and equipment, the largest category of capital was V50 billion or more at 100 contracts (35.6% of contracts in that technology category). In chemical products, the largest category was V10-50 billion at 76 contracts (37.8% of contracts in that technology category).

**Table 25. Status of Capital by Mid-Level Technology Category**

Level of capital	Electrical machinery and apparatus	General machinery and apparatus	Chemical products
V50 million or less	96 (-17.9)	29 ( 3.6)	15 (-16.7)
V50-100 million	186 ( 14.1)	16 (-33.3)	7 ( 16.7)
V100-500 million	376 ( -2.1)	30 ( 50.0)	11 (-42.1)
V500 million-V1 billion	28 (-30.0)	8 (-11.1)	10 ( 0.0)
V1-5 billion	161 (-22.6)	26 ( -7.1)	28 ( 3.7)
V5-10 billion	86 ( -2.3)	14 (-30.0)	21 (-16.0)
V10-50 billion	289 ( 21.4)	54 (-11.5)	76 ( -3.8)
V50 billion or more	751 ( 4.0)	100 ( -2.9)	31 ( 47.6)
Unknown	15 ( 25.0)	4 (100.0)	2 ( 0.0)
Total	1,988 ( 0.8)	281 ( -4.7)	201 (-2.9)

Note: "Unknown" refers to entities such as foundations, corporations, public organizations, educational organizations, special corporations, and individuals. Number in parentheses is percentage comparison to previous year.

#### **9. Technology Introductions by Foreign-Affiliated Corporations**

There were 106 technology introductions (3.3% of total) by companies in which non-residents owned 50% or more of stock or business interests. This represents an increase of 12.8% over the previous year (see Table 26). Such technology introductions by mid-level technology category are: electrical machinery and apparatus, 41 contracts (38.7% of technology introductions by foreign-affiliated corporations); chemical products, 16 (15.1%); general machinery and apparatus, 10 (9.4%); and food and tobacco, 7 (6.6%). (See Table 27).

The number of foreign-affiliated contracts compared to total contracts by technology category were: food and tobacco, 20.0% of total contracts in the food and tobacco category (previous year, 3.1%); chemical products, 8.0% (previous year, 11.1%); general machinery and apparatus, 3.6% (previous year, 3.1%); and electrical machinery and apparatus (previous year, 2.1%).



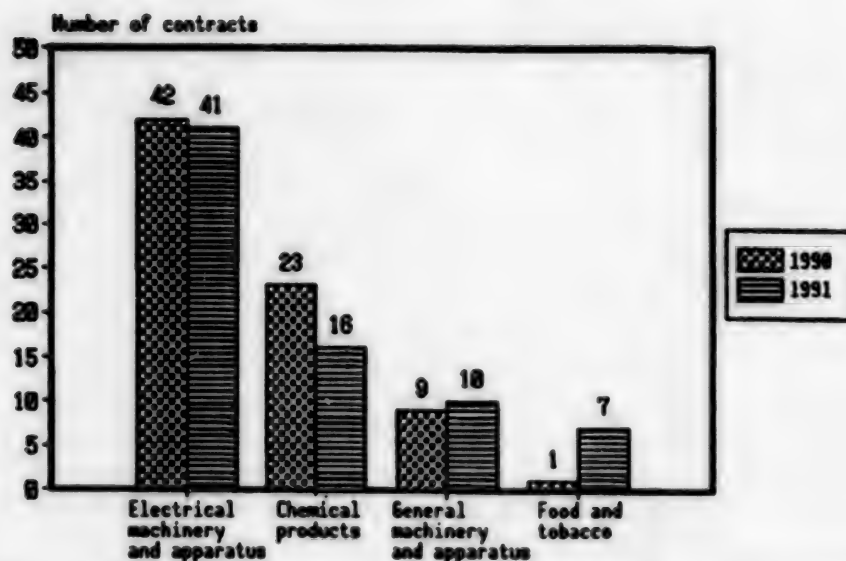


Figure 10. Technology Introductions by Foreign-Affiliated Corporations

Table 26. Technology Categories in Which Foreign-Affiliated Firms Are Numerous

Technology category	1991	Compared to previous year (%)	1990
All categories	106	12.8	94
Electrical machinery and apparatus	41	-2.4	42
Chemical products	16	-30.4	23
General machinery and apparatus	10	11.1	9
Food and tobacco	7	600.0	1
Other products	5	-28.6	7

Table 27. Percentage of Foreign-Affiliated Firms by Technology Category

Technology category	Percentage taken up by foreign-affiliated firms (%)	
	1990	1991
Food and tobacco	20.0	3.1
Chemical products	8.0	11.1
Other products	5.6	5.4
General machinery and apparatus	3.6	3.1
Electrical machinery and apparatus	2.1	2.1

The percentage of foreign-affiliated corporations' technology introduction in which there were no limits on exports were: 1991 (April to December), 13.3% (28.1% for other corporations); 1990, 10.6% (27.9% for other corporations); and 1989, 4.8% (25.8% for other corporations). (See Table 28).

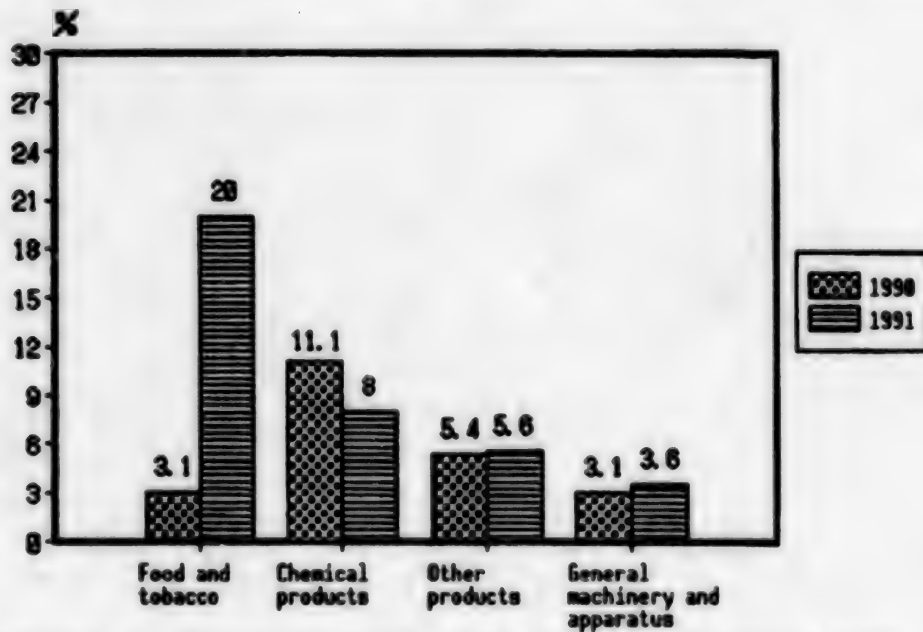


Figure 11. Percentage Taken Up by Foreign-Affiliated Firms

Table 28. Foreign-Affiliated Firms and Export Limits

Period	Percentage with no limits (%)	
	Foreign-affiliated firms	Firms other than foreign affiliated firms
1991	13.3	28.1
1990	10.6	27.9
1989	4.8	25.8

### 1.8 Characteristics of changed contracts

(See Part 2 Statistical tables 2-11).

- 1,200 changed contracts; running royalty changes amount to 47%

There were 1,200 changed contracts in 1991, a decline of 83 contracts (6.5%). (See Table 29).

The parties to the contract changed the position succession in 195 cases or 16.3% of the total (down 33.4% compared to previous year). There were 134

Table 29. Changes in Contract Changes

Content of change	1991	Compared to previous year (%)	1990
Total contracts	1,200	-6.5	1,283
Position succession	195	-33.4	293
Changes to existing contracts	1,066	-1.0	1,077
Contract period	493	7.2	460
Extension	455	5.8	430
Shortening	6	100.0	3
Initial payment	311	11.5	279
Increase	280	6.9	262
Decrease	24	71.4	14
Running royalty	499	-1.4	506
Increase	307	0.3	306
Decrease	137	14.2	120
Minimum payment	182	-16.5	218
Increase	154	-8.3	168
Decrease	25	-46.8	47
Exclusive rights	19	0.0	19
Gain	11	37.5	8
Loss	8	-27.3	11
Re-implementation rights	26	-31.6	38
Gain	21	-30.0	30
Loss	5	-37.5	8
Sales territory	52	-24.6	69
Expansion	30	-30.2	43
Contraction	20	0.0	20
Scope of technology	300	-16.0	357
Expansion	264	-18.5	324
Contraction	7	16.7	6

cases in which only the position succession was changed, leaving 1,066 cases in which the content of existing contracts was changed, down 1.0% from the previous year.

On an item-by-item basis, contract changes to running royalties were most numerous at 499 contracts (46.8% of contracts with changes made to existing contracts), followed by: contract period, 493 contracts (46.2% of contracts with changes to existing contracts; initial payment, 311 (29.2%); scope of technology, 300 (28.1%); and minimum payment, 182 (17.1%).

The biggest rise in the number of contracts compared to the previous year was 11.5% in initial payment, followed by 7.2% in contract term.

Looking at the content of the changes, percentage changes in increases were large for all items: lengthening of contract period, 92.3%; increase in the amount of initial payment, 90.0%; and expansion of the scope of technology, 88.0%. Compared to the previous year, contracts with increases in initial payments rose by 6.9%, the largest percentage rise, followed by: contract period extension, up 5.8%; and running royalty increase, up 0.3%. The category with the largest decline was contracts with a reduction in minimum payment.

### 1.9 Status of Technology Introductions by Industry

(See Part 2 Statistical tables 2-12).

In the past, this survey has focused on the content of introductions of foreign technology. It has used the Japan Standard Industrial Classifications (JSIC) compiled by the Administrative Management Agency, to categorize technology and to compile statistics.

This report uses industrial classifications for the companies which introduced technology. This is used for comparison and consideration of statistics given the Office of the Prime Minister's "Report on Science and Technology Research" for technology imports by industry. It is also used for the investigation of the diversification of corporate management and for the breakdown of borders between industries. In categorizing companies, this report relied on the "Directory of Companies and Corporations" of the Statistical Bureau of the Prime Minister's Office. Corporations not included in the Directory were categorized by JSIC standards.

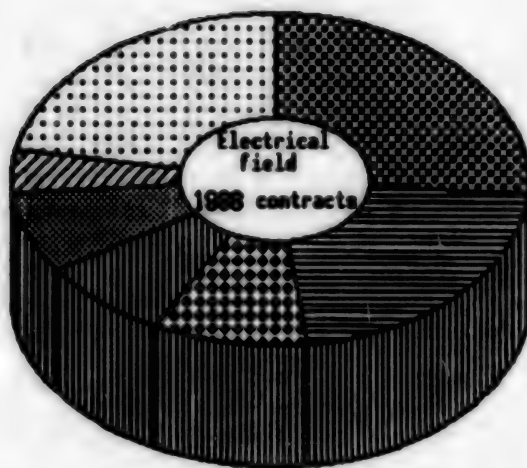
#### 1. Industries by industrial field

Industries were divided into five industrial fields: chemicals, metal, machinery, electrical, and other (see Part 2, Statistical table C). In 1991 the category accounting for the largest proportion of total new technology introduction contracts was electrical with 1,988 contracts (63% of total contracts). Electrical was followed by: machinery, 368 (11% of total contracts); chemical, 274 (9%); and metal, 59 (2%). Other fields accounted for 486 contracts or 15% of total contracts. (See Figure 12).

• In electrical field, textile and machinery/apparatus wholesalers in first place with 26.4%

When considering the role that the industrially classified firms play in technology introduction within their industrial field, it is apparent that the electrical field, with 1,988 contracts or 63% of total contracts, plays a dominant role. Within this field, computer software accounts for 1,522 contracts.

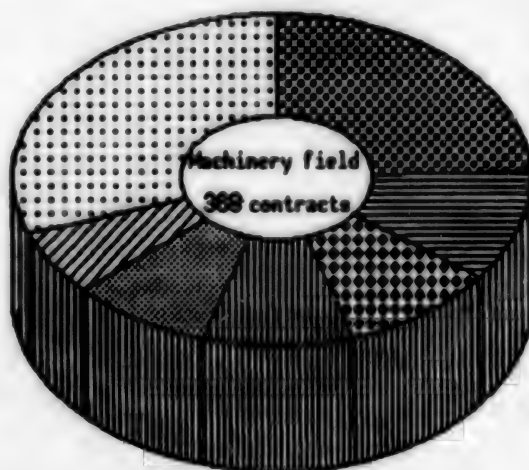




Electrical

Wholesalers of textiles, machinery and apparatus, construction materials, and other goods	26.4%	524
Communications, electronic/electrical measurement	21.6%	430
Electrical machinery and apparatus	9.9%	197
Goods leasing	7.9%	158
Information services, surveys, and advertising	7.8%	155
Machinery	4.2%	83
Other	22.2%	441
Total	100.0%	1988

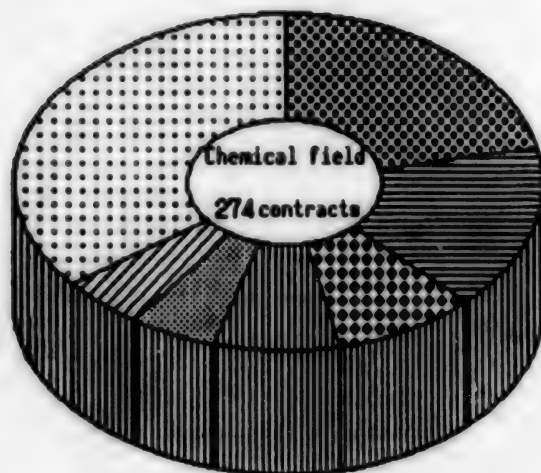
Figure 12(a). No. of Technology Introduction Contracts by Industry in the Electrical Field



Machinery

Machinery	24.5%	98
Automotive	18.9%	48
Transportation, communication, public service	18.1%	37
Wholesalers of textiles, machinery and apparatus, construction materials, and other goods	9.2%	34
Precision machinery	8.7%	32
Communications, electronic/electrical measurement	6.5%	24
Other	38.2%	111
Total	100.0%	368

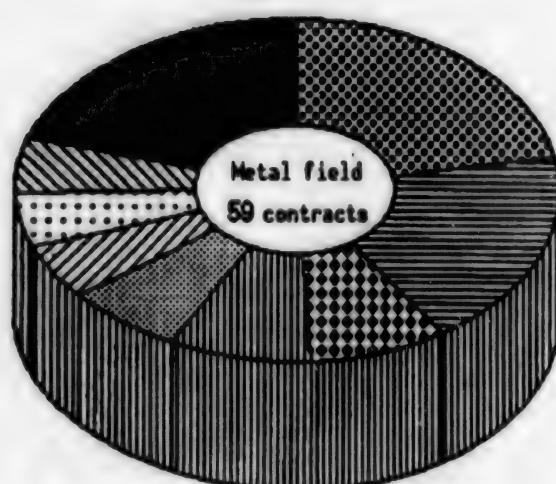
Figure 12(b). No. of Technology Introduction Contracts by Industry in the Machinery Field



Pharmaceutical	21.5%	59
General chemicals and synthetic textiles	16.1%	44
Oil and coal products	9.1%	25
Construction	7.7%	21
Oil and coal products	5.5%	15
Fats and paints	4.7%	13
Other	35.4%	97
Total	100.0%	274

#### Chemical

Figure 12(c). No. of Technology Introduction Contracts by Industry in the Chemical Field



Nonferrous metals	22.0%	13
Steel	18.6%	11
Metal products	8.5%	5
Machinery	8.5%	5
Wholesalers of textiles, machinery and apparatus, construction materials, and other goods	6.8%	4
General chemicals and synthetic textiles	5.1%	3
Automotive	5.1%	3
Other transportation machinery	5.1%	3
Other	20.3%	12
Total	100.0%	59

#### Metal

Figure 12(d). No. of Technology Introduction Contracts by Industry in the Metal Field

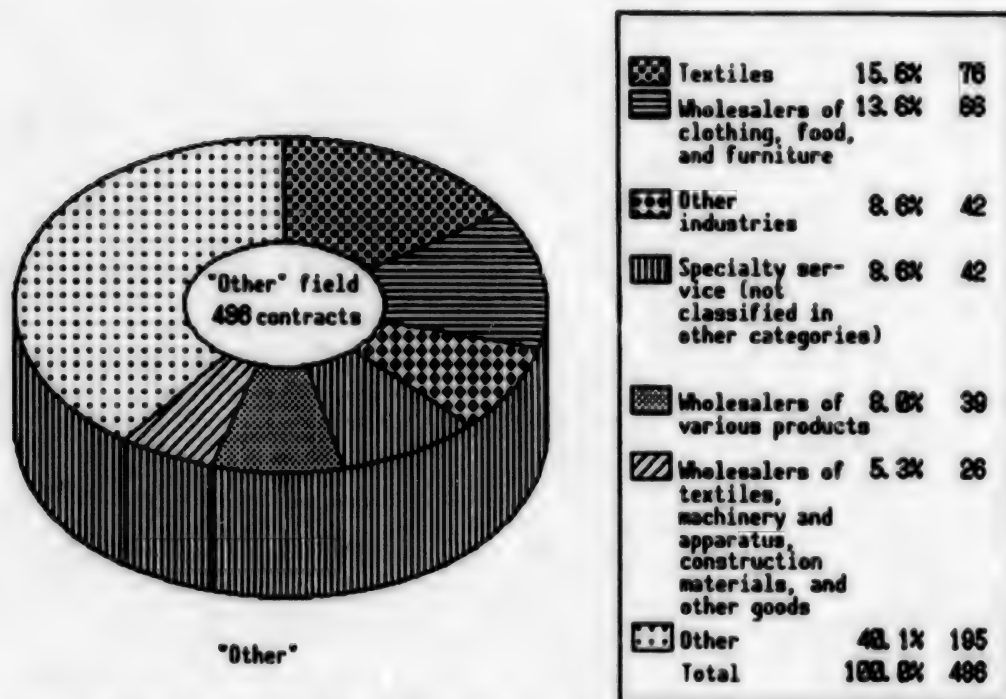


Figure 12(e). No. of Technology Introduction Contracts by Industry in the "Other" Field

The largest category within the electrical field is wholesalers of textiles, machinery and apparatus, construction materials, and other goods (abbreviated below as "textile and other wholesalers") with 524 contracts or 26.4% of electrical contracts, followed by: communications/electronic/electrical measurement industry, 430 contracts (21.6% of electrical contracts); and electrical machinery and apparatus, 197 (9.9%). The number one spot of textile and other wholesalers can be attributed to the introduction of software and is not unique to this industry.

In the field of machinery, textile and other wholesalers are in fourth place. This is because the machinery-related industries category dominates due to technology introductions by trading companies. The decline of borders can't be seen here. Automotive industries rank second. It is characteristic that there has already been this level of introductions.

It is noteworthy that, in the chemical field, the construction industry ranks fifth with 15 introductions (5.5% of contracts in the chemical field).

Total technology introductions in the metal field number 59. Nonferrous metals rank number one with 13 contracts, but since the number contracts is so small, there's nothing noteworthy.

Some of the industries included in other fields are: agriculture/forestry/fishing, mining, construction, food and tobacco, and textiles. The textile industry is number one with 76 contracts (15.6% of textile contracts) and the category of other industries is number three with 42 contracts (8.6% of

textile contracts). It is noteworthy that aside from these two industries, tertiary industries are in first place.

## 2. Industries by country

(See Part 2 Statistical tables 2-13).

- In introductions from the United States, wholesalers of textiles and other goods rank number one with 20.6%

Among the four leading countries from which technology was introduced, America led with 2,002 contracts (63% of total contracts), followed by: England, 213 contracts (8%); France, 205 contracts (6%); and Germany, 170 contracts (5%). (See Figure 13).

Software introductions by software companies linked to trading companies accounted for large percentage of the 404 contracts from the United States to the category of wholesalers of textiles and other goods, the largest introducer of technology from the United States

Software introductions by large electronics companies also were dominant in the number two category of communications/electronic/electrical measurement industry. Software also dominated in the number three category of electrical machinery and apparatus.

The top three industrial categories were followed by industries such as goods leasing and machinery, but in every category companies introducing software occupied the number one spot.

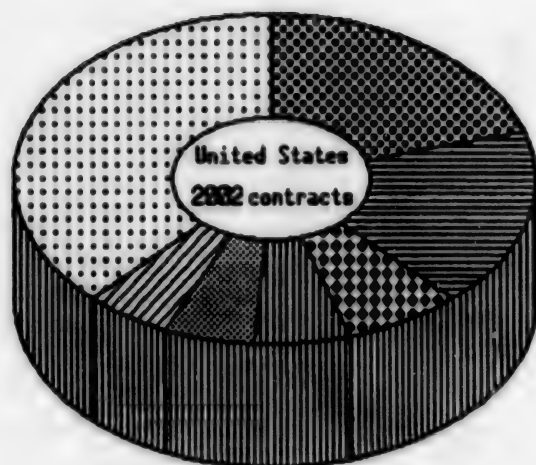
For technology introductions from England, software again dominated in the number one industrial category of technology introductions, the communications/electronic/electrical measurement industry.

For France, the textile industry ranked number one in technology introductions with 34 introductions, followed by 25 in the category of wholesalers of clothing, food, and furniture. Trademark cases made up the majority of introductions. This differs from other countries.

For Germany, wholesalers of textiles and other goods ranked number one. From number two down, were distributed relatively evenly among various categories. There was no leaning toward a particular field of technology.

Overall there is not much remarkable about technology introductions by country, though the impact of software introductions is large. However, the emphasis on trademark introductions by companies related to textiles is noteworthy.

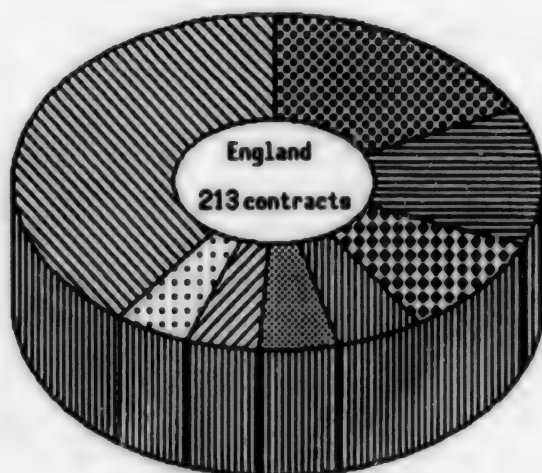




United States

Wholesalers of textiles, machinery and apparatus, construction materials, and other goods	20.2%	484
Communications, electronic, electrical measurement industry	17.6%	353
Electrical machinery and apparatus	7.4%	149
Goods leasing	5.8%	117
Machinery	5.6%	112
Information services, surveys, advertising	5.5%	111
Other	37.8%	756
Total	100.0%	2882

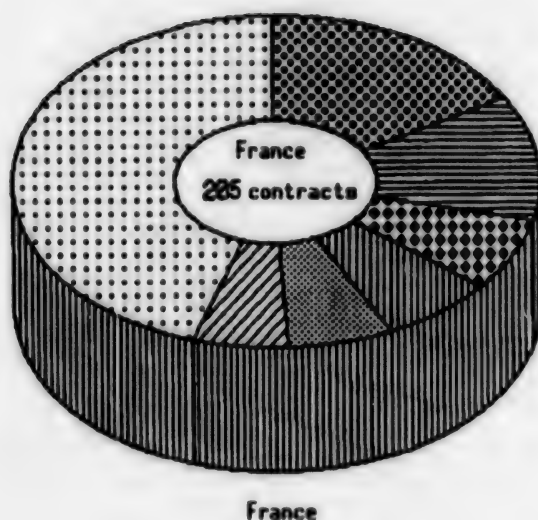
Figure 13(a). No. of Technology Introduction Contracts From the United States by Industry



England

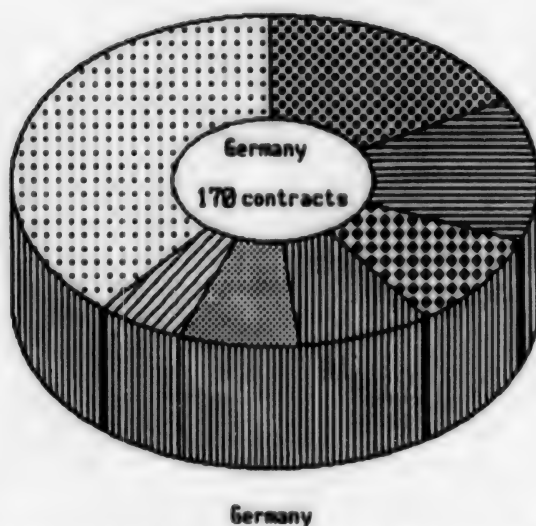
Communications, electronic, electrical measurement industry	17.8%	38
Wholesalers of textiles, machinery and apparatus, construction materials, and other goods	13.1%	28
Electrical machinery and apparatus	9.9%	21
Wholesalers of clothing, food, furniture, and other goods	5.2%	11
Machinery	4.7%	10
Wholesalers of various products	4.7%	10
Information services, surveys, advertising	4.7%	10
Other	39.9%	85
Total	100.0%	213

Figure 13(b). No. of Technology Introduction Contracts From England by Industry



Machinery	16.6%	34
Wholesalers of clothing, foods, furniture and other goods	12.2%	25
Wholesalers of textiles, machinery and apparatus, construction materials, and other goods	7.3%	15
Specialty service (not classified in other categories)	6.8%	14
Communications, electronic, electrical measurement	6.3%	13
Industry	5.9%	12
Goods leasing	5.9%	12
Other	44.8%	92
Total	100.0%	285

Figure 13(c). No. of Technology Introduction Contracts From France by Industry



Wholesalers of textiles, machinery and apparatus, construction materials, and other goods	17.1%	29
Machinery	14.1%	24
Electrical machinery and apparatus	9.4%	16
General chemicals and synthetic textiles	7.6%	13
Communications, electronic, electrical measurement	7.6%	13
Industry	5.3%	9
Pharmaceutical	5.3%	9
Other	38.8%	66
Total	100.0%	170

Figure 13(d). No. of Technology Introduction Contracts From Germany by Industry

### 3. Industries by Technology Introduction

(See Part 2 Statistical tables 2-14).

Among a total of 3,175 technology introductions, 1,855 contracts were introduced to industries which are subject to the Management and Coordination Agency's statistics and 1,320 contracts were introduced to other industries such as wholesalers which are not subject to the statistics.

Among a total of 361 technology introductions solely by trademark, 158 contracts were introduced within the industries subject to the Management and Coordination Agency's statistics and 203 contracts were introduced to other industries not subject to the statistics. The number of trademark introductions to other industries that are not subject to the statistics including a wholesale field exceeds trademark introductions within the industries subject to the statistics including a manufacturing field as the central figure. Trademark introductions are concentrated among companies in fashion-related industries led by wholesalers including a clothing field with 68 contracts, 67 contracts in a textile industry, and 32 contracts by wholesalers of other goods.

Technology introductions solely by patent with a total of 205 introductions are dominated by the industries subject to the Management and Coordination Agency's statistics which rank number one with 182 contracts occupying 88.8%: 92 contracts in an electrical machinery industry, 21 contracts in a chemical industry, and 19 contracts in a machinery industry occupy the majority of the contracts. The number of contracts in an electrical machinery industry is noteworthy. Among other industries that are not subject to the statistics, introductions are mainly in a trading industry led by 22 contracts within wholesalers of textiles and other goods.

Among a total of 1,972 know-how introductions, 989 contracts are within the industries subject to the statistics and 983 contracts are in other industries not subject to the statistics: 507 contracts by wholesalers of textiles and other goods, 418 contracts in an electrical machinery industry, 151 contracts in a goods leasing industry, and 106 contracts in a machinery industry rank the top five. The dispersion is due to the effect of software which occupies numbers of the contracts.

## Part 2. Statistical Tables

**Table A. Overview of Designated Technologies (Under the old law through December 1991)**

<u>Item</u>	<u>Range of technologies</u>
1. Airplanes	(1) Technology related to the manufacture of airplanes. (2) Technology related to the manufacture of airplane parts or attachments
2. Weapons	(1) Technology related to the manufacture of weapons (2) Technology related to the manufacture of weapons parts or attachments (3) Technology related to the manufacture of electronic equipment for military use
3. Gunpowder	Technology related to the manufacture of types of gunpowder
4. Nuclear power	(1) Technology related to the manufacture or use of nuclear reactors (the term "nuclear reactors" here and below includes nuclear fusion) or their parts and attached apparatus or their structural materials and gas turbines or nuclear power generators (2) Technology related to the manufacture or use of nuclear fuels and to the manufacture of apparatus used in their recycling (3) Technology related to the manufacture of apparatus generating radiation, to their use and to the use/management of radioactive materials, and to the manufacture of apparatus used in the aforementioned
5. Space development	(1) Technology related to the manufacture or use of spacecraft (with the exception, here and below, of weather satellites) and of equipment designed especially for rocket launching, guidance control, and pursuit. (2) Technology related to the manufacture or use of test apparatus specially designed for the development of spacecraft (3) Technology related to the manufacture or use of the source of rocket propulsion or to parts, attachments or materials for categories (1) and (2)
6. Computers	(1) Technology related to the manufacture of computers and attached apparatus (2) Technology related to manufacture of apparatus for the application of computers (3) Technology related to the use of (1) or (2)



[Continuation of Table A]

7. Electronic parts for use in next-generation computers	(1) Technology related to the manufacture of massively parallel processors. Parallel processors including massively parallel processors, parallel processors which are made using microscopic processing technology such as electron beam lithography or X-ray lithography and for which one circuit has capabilities equivalent to more than 100,000 transistors or diodes. (2) Technology related to the manufacture of new logic elements and new memory elements. Logic elements and memory based on principles other than superconductive elements, microwave semiconductor elements, light elements or preexisting semiconductor technology
8. Machinery related to laser processing and optical communications	(1) Technology related to the manufacture of laser emitters and semiconductor light-emitting or receiving optical communications (2) Technology related to the manufacture of optical fibers and optical circuits
9. New materials	(1) Technology related to the manufacture of uncrystallized metal (amorphous) materials (2) Technology related to the manufacture of superconductive materials
10. Electrolysis of table salt without the use of mercury	Technology related to the manufacture of sodium hydroxide, chlorine or hydrogen through the electrolysis of table salt without the use of mercury
11. Ocean-bottom oil production	Technology related to the manufacture of apparatus for the production of oil and natural gas from oil fields on the ocean bottom and of apparatus for the establishment and use of such apparatus (limited to apparatus that can be used more than 200 meters below the ocean surface). Does not include technology using plant forms.
12. Leather and leather products	(1) Technology related to the manufacture of leather and leather products (2) Industrial proprietary rights relating to leather and leather products

**Table A. Overview of Designated Technologies (Under the new law through January 1992)**

<b><u>Item</u></b>	<b><u>Range of technologies</u></b>
1. Airplanes	(1) Technology related to the manufacture of airplanes (2) Technology related to the manufacture of airplane parts or attachments
2. Weapons	(1) Technology related to the manufacture of weapons (2) Technology related to the manufacture of weapons parts or attachments (3) Technology related to the manufacture of electronic equipment for military use
3. Gunpowder	Technology related to the manufacture of types of gunpowder
4. Nuclear power	(1) Technology related to the manufacture or use of nuclear reactors (the term "nuclear reactors" here and below includes nuclear fusion) or their parts and attached apparatus or their structural materials and gas turbines or nuclear power generators (2) Technology related to the manufacture or use of nuclear fuels and to the manufacture of apparatus used in their recycling (3) Technology related to the manufacture of apparatus generating radiation, to their use and to the use/management of radioactive materials, and to the manufacture of apparatus used in the aforementioned
5. Space development	(1) Technology related to the manufacture or use of spacecraft (with the exception, here and below, of weather satellites) and of equipment designed especially for rocket launching, guidance control, and pursuit. (2) Technology related to the manufacture or use of test apparatus specially designed for the development of spacecraft (3) Technology related to the manufacture or use of the source of rocket propulsion or to parts, attachments or materials for categories (1) and (2)

**Table B. Technology Types and Corresponding Standard Industrial Classifications (JSIC)**

Code	Technology type	JSIC
01	All industries	
02	Agriculture, forestry and fishing	A Agriculture B Forestry C Fishing
03	Mining	D Mining
04	Construction	09 General construction 10 Construction by occupation (except for facilities construction) 11 Facilities construction
05	Manufacturing	
11	Food and tobacco	121 Manufacturing of livestock food 122 Manufacturing of marine food 123 Manufacturing of canned vegetables and fruit and preserved food 124 Manufacturing of spices 125 Manufacturing of sugars 126 Manufacturing of refined grain 127 Manufacturing of breads and cakes 128 Manufacturing of animal fats 129 Manufacturing of other foods 131 Manufacturing of carbonated beverages 132 Manufacturing of alcoholic beverages 133 Manufacturing of tea and coffee 134 Manufacturing of ice 135 Manufacturing of fodder and organic fertilizer 136 Manufacturing of tobacco
12	Textiles	141 Silk thread manufacturing 142 Spinning 143 Manufacturing of silk thread 144 Cloth 145 Manufacturing of knits 146 Dyeing 147 Rope and manufacturing of rope 148 Manufacturing of lace and textile sundries 149 Other textile industries
13	Clothing and textile products	
14	Outerware	151 Manufacturing of outerware (except Japanese-style outerware)
15	Other clothing and textile products	152 Manufacturing of shirts and underwear (except Japanese-style) 153 Manufacturing of hats 154 Manufacturing of fur clothing and accessories 155 Manufacturing of other clothing and textile accessories (including Japanese-style) 159 Manufacturing of other textile products

Code	Technology type	JSIC
16	Wood, wood products, furniture, etc.	16 Manufacturing of wood and wood products (except furniture)
17	Pulp, paper products and printing	17 Manufacturing of furniture and equipment 18 Manufacturing of pulp, paper, and processed paper products
20	Chemical products	19 Publishing, printing, and related industries
21	Inorganic chemicals	201 Manufacturing of chemical fertilizers 202 Manufacturing of "muki" chemicals
22	Organic chemicals	203 Manufacturing of
23	Synthetic textiles	204 Manufacturing of synthetic textiles
24	Fat processing, soap, etc.	205 Manufacturing of processed fat products, soap, synthetic detergents, surfactant detergents
25	Pharmaceuticals	206 Manufacturing of pharmaceuticals
26	Other chemical products	2091 Manufacturing of explosives 2092 Manufacturing of agricultural chemicals 2093 Manufacturing of perfume 2094 Manufacturing of cosmetics, toothpaste, and other personal care products 2095 Manufacturing of gelatin and adhesives 2096 Manufacturing of light-sensitive materials for photography 2097 Manufacturing of natural resin products and wood chemical products 2098 Manufacturing of reagents 2099 Manufacturing of chemical products not included in other categories
30	Oil and coal products	211 Oil refining 212 Manufacturing of lubricants and grease (except those which rely on oil refining) 213 Manufacturing of coke 214 Manufacturing of briquettes 215 Manufacturing of paving materials 219 Manufacturing of other oil and coal products
31	Rubber products	23 Manufacturing of rubber products
32	Tanned leather	24 Manufacturing of tanned leather, tanned leather products, and fur products
33	Ceramics	251 Manufacturing of glass and glass products 252 Manufacturing of cement and cement products 253 Manufacturing of clay products for construction use (not including porcelain) 254 Manufacturing of porcelain and related products 255 Manufacturing of fireproof materials 256 Manufacturing of carbon and graphite products 257 Manufacturing of polishing materials and products 258 Manufacturing of bone and stone products 259 Manufacturing of other ceramic and earthenware products



Code	Technology type	JSIC
34	Steel	261 Manufacturing of iron using a blast furnace 262 Manufacturing of iron not using a blast furnace 263 Steel manufacturing and steel rolling industry 264 Manufacturing of rolled steel materials not relying on steel manufacturing (not including surface management rolled steel) 265 Manufacturing of surface management rolled steel 266 Manufacturing of forged steel, foundry products, and cast steel 267 Manufacturing of pig iron cast products 269 Other steel industry
35	Nonferrous metals	271 First smelting and refining of nonferrous metals 272 Second smelting and refining of nonferrous metals (including manufacturing of nonferrous metal alloys) 273 Rolling of nonferrous metals and nonferrous alloys (including extracting alloys) 274 Manufacturing of cast nonferrous metals 275 Manufacturing of electric lines and cables 279 Other nonferrous metal manufacturing
36	Metal products	281 Manufacturing of tinplate and other plated products 282 Manufacturing of Western utensils, knives, implements, and metal products 283 Manufacturing of attachments for heating apparatus and plumbing 284 Manufacturing of metals products for use in construction and building (including plated metals) 285 Manufacturing of metal press products 286 Manufacturing of powder and metal products, covering and engraving industry, heat management industry (not including enameled ironware) 287 Manufacturing of metal wire products (not including screws) 288 Manufacturing of bolts, nuts, rivets, small screws, wood screws etc. 289 Manufacturing of other metal products
40	General machinery and apparatus	
41	Boilers and motors	291 Manufacturing of boilers and motors

Code	Technology type	JSIC
42	Machinery for use in agriculture, construction, and mining	292 Manufacturing of machinery for use in agriculture (not including farm implements) 293 Manufacturing of machinery for construction and mining (including trucks used for construction, agriculture, and transport)
43	Metal processing machinery	294 Manufacturing of metal processing machinery
44	Textile machinery	295 Manufacturing of textile machinery
45	Machinery for use in special industries	296 Manufacturing of machinery for use in special industries
46	Machinery for general industrial use	
47	Pumps, compressors, blowers	2971 Manufacturing of pumps and their attachments 2972 Manufacturing of air compressors, gas compressors, and blowers
48	Power equipment	2973 Manufacturing of elevators and escalators 2974 Manufacturing of cargo-handling transport facilities 2975 Manufacturing of power transmission apparatus (not including round bearings, roller bearings)
49	Chemical machinery and attachments	2978 Manufacturing of chemical machinery
50	Other machinery for industrial use	2976 Manufacturing of industrial kilns 2977 Manufacturing of oil pressure and air pressure equipment 2979 Manufacturing of other machinery and apparatus for general industrial use
51	Other machinery	298 Manufacturing of machinery and apparatus for office, service and public welfare use 299 Manufacturing of other machinery and parts
52	Transportation machinery	311 Manufacturing of automobiles and attachments 312 Manufacturing of railroad cars and parts 313 Manufacturing of bicycles and parts 314 Manufacturing and repair of ships, manufacturing of machinery for ship-use 315 Manufacturing of airplanes and attachments 319 Manufacturing of other machinery and apparatus for transportation use
53	Precision machinery	321 Manufacturing of weighing, measurement, analytical, and testing apparatus 322 Manufacturing of surveying machinery and apparatus 323 Manufacturing of machinery, apparatus, and products for medical use

Code	Technology type	JSIC
		324 Manufacturing of machinery and apparatus for physics and chemistry
		325 Manufacturing of optical machinery and apparatus and of lenses
		326 Manufacturing of eyeglasses (including frames)
		327 Manufacturing of watches and parts
60	Electrical machinery and apparatus	
61	Electrical machinery for generation, transmission and distribution of electricity and for industrial use	301 Manufacturing of electrical machinery for generation, transmission, and distribution of electricity and for industrial use
62	Electrical machinery, light bulbs, and lighting apparatus for public welfare	302 Manufacturing of electrical machinery and apparatus for public welfare use 303 Manufacturing of light bulbs and electrical lighting apparatus
63	Communications equipment	
64	Wire and wireless communication equipment	3041 Manufacturing of wire communication equipment and apparatus 3042 Manufacturing of wireless communication equipment and apparatus
65	Radio, television, and sound apparatus	3043 Manufacturing of radios, receivers and television receivers 3044 Manufacturing of electrical sound machinery and apparatus
66	Other communications apparatus	3045 Manufacturing of traffic signals and safety apparatus 3049 Manufacturing of other communications and related machinery and apparatus
67	Electronic applications apparatus	
68	Computers	3051 Manufacturing of computers and attachments
69	Other electronic applications apparatus	3061 Manufacturing of X-ray apparatus 3062 Manufacturing of video apparatus 3069 Manufacturing of other electronic applications apparatus
70	Parts for use in electronics and communications	308 Manufacturing of parts for use in electronic and communications apparatus
71	Other electrical equipment	307 Manufacturing of electronic measurement apparatus 309 Manufacturing of electrical machinery and apparatus

Code	Technology type	JSIC
80	Other products	
81	Precious metals personal ornaments	341 Manufacturing of precious metal products (including gem processing) 345 Manufacturing of personal ornaments, decorations, buttons and related goods (not including those made from precious metals and gems)
82	Leisure goods	342 Manufacturing of instruments and records 343 Manufacturing of toys and athletic equipment
83	Plastic products	221 Manufacturing of plastic sheets, rods, pipes, pipe couplings, etc. 222 Manufacturing of plastic film, sheets, flooring, and synthetic leather 223 Manufacturing of plastic products for industrial use 224 Manufacturing of bubble and reinforced plastic products 225 Manufacturing of plastic wood materials 229 Manufacturing of other plastic products
84	Manufacturing industries not included in other categories	33 Manufacturing of weapons 344 Manufacturing of pens, pencils, drawing products and other office use products 346 Manufacturing of lacquer 348-349 Manufacturing industries not included in other categories
90	Other industries	G Electric, gas, heat and water supply H Transportation and communication industry I Wholesale, retail, and restaurants J Financial and insurance industry K Real estate industry L Service industry N [sic] Public service (not included in other categories) M Unclassifiable industries



Table C. Technology Fields and Technology Types

Code	Technology type	Technology field
01	All industries	Other
02	Agriculture, forestry, and fishing	
03	Mining	
04	Construction	
05	Manufacturing	Other
11	Food and tobacco	
12	Textiles	
13	Clothing and textile products	
14	Outerware	
15	Other clothing and textile products	
16	Wood materials, wood products, furniture, etc.	
17	Pulp, paper products and printing	Chemicals
20	Chemical products	
21	Inorganic chemicals	
22	Organic chemicals	
23	Synthetic textiles	
24	Fat processing, soap, etc.	
25	Pharmaceuticals	
26	Other chemical products	
30	Oil and coal products	
31	Rubber products	Other
32	Tanned leather, tanned leather goods and fur	
33	Ceramics	
34	Steel	Metals
35	Nonferrous metals	
37	Metal products	
40	Machinery and apparatus for general industrial use	Machinery
41	Boilers and motors	
42	Machinery for use in agriculture, construction, and mining	
43	Metal processing machinery	
44	Textile machinery	
45	Machinery for use in special industries	
46	Machinery for general industrial use	
47	Pumps, compressors, blowers	
48	Power equipment	
49	Chemical machinery and apparatus	Chemicals

[Continuation of Table C]

Code	Technology type	Technology field
50	Other machinery for general industrial use	Machinery
51	Other machinery	
52	Transportation machinery	
53	Precision machinery	
60	Electrical machinery and apparatus	Electrical
61	Electrical machinery for generation, transmission and distribution of electricity and for industrial use	
62	Electrical machinery, light bulbs, and lighting apparatus for public welfare	
63	Communications equipment	
64	Wire and wireless communication equipment	
65	Radio, television, and sound apparatus	
66	Other communications equipment	
67	Electronic applications apparatus	
68	Computers	
69	Other electronic applications apparatus	
70	Parts for use in electronics and communications	
71	Other electrical machinery	
80	Other products	Other
81	Precious metals and personal ornaments	
82	Leisure goods	
83	Plastic products	
84	Manufacturing industries not included in other categories	
90	Other industries	

Note: (1) Technology fields are divided into five categories: electrical, machinery, chemicals, metals, and other.

(2) Technology fields have 48 categories (not including codes 01, 13, 20, 40, 46, 63, 67, and 80).

Table 2-1. Shifts in the Number of Technology Introductions

Year	Type A	Type B	Total	Year	Type A	Type B	Total
1950	27	49	76	1971	1,546	461	2,007
1951	101	87	188	1972	1,916	487	2,403
1952	142	110	252	1973	1,931	519	2,450
1953	102	133	235	1974	1,572	521	2,093
1954	82	131	213	1975	1,403	433	1,836
1955	71	113	184	1976	1,461	432	1,893
1956	143	167	310	1977	1,527	387	1,914
1957	118	136	254	1978	1,755	384	2,139
1958	90	152	242	1979	1,700	416	2,116
1959	153	225	378	1980	1,860	282	2,142
1960	327	261	588	1981			2,076
1961	320	281	601	1982			2,229
1962	328	429	757	1983			2,212
1963	564	573	1,137	1984			2,378
1964	500	541	1,041	1985			2,436
1965	472	486	958	1986			2,361
1966	601	552	1,153	1987			2,709
1967	638	657	1,295	1988			2,834
1968	1,061	683	1,744	1989			2,898
1969	1,154	475	1,629	1990			3,211
1970	1,330	438	1,768	1991			3,175

Note: There is no distinction between A and B after December 1980.

Table 2-2. Shifts in No. of Technology Introductions by Country

Country		1991	1990	1989	1988	1987
United Nations		1	0	0	0	0
Asia	China	10	5	6	6	9
	India	1	1	4	0	0
	Indonesia	5	4	1	1	1
	Israel	1	2	1	2	1
	Japan	0	0	1	1	4
	South Korea	20	18	14	23	17
	Singapore	50	40	47	30	21
	Hong Kong	9	6	17	20	11
	Taiwan	6	8	3	1	3
	Thailand	2	0	0	0	1
	Malaysia	2	0	0	0	0
	Macao	0	0	1	0	0
Pacific	Australia	27	14	22	21	12
	New Zealand	2	4	1	3	1
Africa	Liberia	11	0	0	1	1
	South Africa	0	0	0	1	1
Europe	EC	0	0	0	0	1
	Austria	9	9	6	11	9
	Belgium	18	22	22	9	11
	Czechoslovakia	1	0	0	0	1
	Denmark	12	11	15	20	7
	Finland	1	4	3	2	4
	France	205	158	187	237	218
	Germany	170	201	198	187	192
	Greece	0	0	0	1	0
	Hungary	4	2	1	3	1
	Ireland	1	4	1	4	4
	Italy	73	80	78	81	115
	Liechtenstein	1	2	0	2	2
	Luxembourg	1	1	1	1	5
	Monaco	0	0	1	1	1
	Netherlands	86	86	78	72	71
	Norway	9	9	6	8	6
	Poland	0	2	0	1	1
	Spain	2	5	5	3	3
	Sweden	33	30	30	31	41
	Switzerland	102	106	81	77	66
	England	213	185	198	193	184
	Channel Islands (British territories)	1	1	0	0	1
	Gibraltar	0	0	1	0	0



[Continuation of Table 2-2]

Country		1991	1990	1989	1988	1987
Soviet Union		8	2	2	11	11
North America	Panama	0	1	0	0	0
	Canada	68	83	49	45	36
	Mexico	1	0	0	1	0
	Panama	1	3	10	12	16
	United States	2002	2119	1808	1705	1613
	Bermuda	0	1	0	0	1
	Cayman Islands	2	0	0	0	2
	Puerto Rico	0	1	0	0	0
	Dutch Antilles	2	0	0	0	0
	Barbados	0	0	1	0	0
South America	Argentina	1	0	0	2	1
	Bolivia	0	1	0	0	0
	Brazil	2	1	0	1	2
	Paraguay	0	0	0	2	0
	Uruguay	1	0	1	1	0
	Chile	0	1	0	0	0
Total		3175	3211	2898	2834	2709

Table 2-3. Technology Introductions by Technology Type and Region for 1991

Region Technology type	Code	Total No.	Asia	Pa- cific	Europe					
					Total No.	France	Ger- many	Italy	Eng- land	Other
All industries	1	3175	106	29	942	205	170	73	213	281
Agriculture, forestry and fishing	2	6			4		3		1	
Mining	3									
Construction	4	26			10	2	1		4	3
Manufacturing	5	3117	106	29	913	200	166	69	206	272
Food and tobacco	11	35	1	2	10	2		3	1	4
Textiles	12	30	1		22	10		3	5	4
Clothing and textile products	13	165	4	1	122	55	3	32	17	15
Outerware	14	106	2		76	31	1	25	13	6
Other clothing and textile products	15	59	2	1	46	24	2	7	4	9
Wood materials, wood products, furniture, etc.	16	10			3	1	1			1
Pulp, paper products and printing	17	11			5		1		3	1
Chemical products	20	201	8	3	91	10	23	3	21	34
Inorganic chemicals	21	7	1		4		2		1	1
Organic chemicals	22	44	1		19	2	5	1	7	4
Synthetic textiles	23	2								
Fat processing, soap, etc.	24	16	1		6	1	2		2	1
Pharmaceuticals	25	102	3	3	48	5	11	1	6	25
Other chemical products	26	30	2		14	2	3	1	5	3
Oil and coal products	30	13			4	1	2			1
Rubber products	31	13	1		6	1	5			
Tanned leather, tanned leather goods and fur	32	44	1		37	16	3	5	3	6

Region Technology type	Code	Total No.	Asia	Pa- cific	Europe					
					Total No.	France	Ger- many	Italy	Eng- land	Other
Ceramics	33	31		1	13	1	2		6	4
Steel	34	6			1					1
Nonferrous materials	35	14		1	4		1		2	1
Metal products	36	39		2	14	1	3		3	7
Machinery and apparatus for general industrial use	40	281	1	4	123	17	44	6	17	39
Boilers and motors	41	71			16	6	4		3	3
Machinery for use in agriculture, construction, and mining	42	8		1	3		2			1
Metal processing machinery	43	25		1	14	2	4	1	2	3
Textile machinery	44	8		1	3		3			
Machinery for use in special industries	45	41		1	19		7	1	4	7
Machinery for general industrial use	46	91	1		50	9	15		6	18
Pumps, compressors, blowers	47	8			4		1			3
Power equipment	48	15			8	2			1	3
Chemical machinery and apparatus	49	60	1		33	7	11		6	9
Other machinery for general industrial use	50	8			5		3		1	1
Other machinery	51	39			18		9	4		3
Transportation machinery	52	75		2	32	2	13		6	11
Precision machinery	53	72		2	26	11	2	3	4	6
Electrical machinery and apparatus	60	1988	89	9	356	59	51	11	111	124

Technology type	Region	Total No.	Asia	Pa-cific	Europe					
	Code				Total No.	France	Ger-many	Italy	Eng-land	Other
Electrical machinery for generation, transmission, distribution of electricity and for industrial use	61	24	1	1	11	2	6			3
Electrical machinery, light bulbs, lighting apparatus for public welfare	62	6	1		3		1			2
Communications equipment	63	125	2	1	48	5	10	6	2	25
Wire and wireless communication equipment	64	51		1	4		3		1	
Radio, TV, and sound apparatus	65	73	2		44	5	7	6	1	25
Other communications equipment	66	1								
Electronic applications apparatus	67	1680	80	6	259	49	28	4	105	73
Computers	68	1614	78	6	246	48	24	4	101	69
Other electronic applications apparatus	69	66	2		13	1	4		4	4
Parts for use in electronics and communications	70	148	5		34	3	6	1	4	20
Other electrical machinery	71	5		1	1					1
Other products	80	89		2	44	11	12	3	7	11
Precious metals and personal ornaments	81	8			6	5		1		
Leisure goods	82	21		1	6	2		1	2	1
Plastic products	83	43		1	19		11		2	6
Manufacturing industries not including in other categories	84	17			13	4	1	1	3	4
Other industries	90	26			15	3		4	2	6



Table 2-3. Technology Introductions by Technology Type and Region for 1991  
(Continuation)

Technology type	Region	Total No.	Soviet Union	North America				South America
	Code			Total No.	United States	Canada	Other	
All industries	1	3175	6	2076	2002	66	8	4
Agriculture, forestry and fishing	2	6		2	2			
Mining	3							
Construction	4	26		5	5			
Manufacturing	5	3117	6	2056	1984	66	6	4
Food and tobacco	11	35	1	21	18	1	2	
Textiles	12	30		7	7			
Clothing and textile products	13	165		36	36			2
Outerwear	14	106		26	26			2
Other clothing and textile products	15	59		10	10			
Wood materials, wood products, furniture, etc.	16	10		7	7			
Pulp, paper products and printing	17	11		6	6			
Chemical products	20	201	3	96	93	2	1	
Inorganic chemicals	21	7		2	1	1		
Organic chemicals	22	44		24	24			
Synthetic textiles	23	2		2	2			
Fat processing, soap, etc.	24	16		9	9			
Pharmaceuticals	25	102	3	45	44	1		
Other chemical products	26	30		14	13		1	
Oil and coal products	30	13		9	9			
Rubber products	31	13		6	6			
Tanned leather, tanned leather goods and fur	32	44		6	6			

Technology type	Region Code	Total No.	Soviet Union	North America				South America
				Total No.	United States	Canada	Other	
Ceramics	33	31		17	17			
Steel	34	6	1	4	4			
Nonferrous materials	35	14		9	7	2		
Metal products	36	39		23	21	2		
Machinery and apparatus for general industrial use	40	281	1	151	147	3	1	1
Boilers and motors	41	71		55	55			
Machinery for use in agriculture, construction, and mining	42	6		2	1		1	
Metal processing machinery	43	25		10	10			
Textile machinery	44	8		4	4			
Machinery for use in special industries	45	41		21	21			
Machinery for general industrial use	46	91	1	39	38	1		
Pumps, compressors, blowers	47	8		4	4			
Power equipment	48	15		7	6	1		
Chemical machinery and apparatus	49	60	1	25	25			
Other machinery for general industrial use	50	8		3	3			
Other machinery	51	39		20	18	2		1
Transportation machinery	52	75		40	38	2		1
Precision machinery	53	72		44	42	2		
Electrical machinery and apparatus	60	1988		1533	1477	54	2	

Technology type	Region	Total No.	Soviet Union	North America				South America
	Code			Total No.	United States	Canada	Other	
Electrical machinery for generation, transmission, distribution of electricity and for industrial use	61	24		11	10	1		
Electrical machinery, light bulbs, lighting apparatus for public welfare	62	6		2	2			
Communications equipment	63	125		74	74			
Wire and wireless communication equipment	64	51		46	46			
Radio, TV, and sound apparatus	65	73		27	27			
Other communications equipment	66	1		1	1			
Electronic applications apparatus	67	1680		1334	1281	51	2	
Computers	68	1614		1283	1231	51	1	
Other electronic applications apparatus	69	66		51	50		1	
Parts for use in electronics and communications	70	148		109	107	2		
Other electrical machinery	71	5		3	3			
Other products	80	89		43	43			
Precious metals and personal ornaments	81	8		2	2			
Leisure goods	82	21		14	14			
Plastic products	83	43		23	23			
Manufacturing industries not including in other categories	84	17		4	4			
Other industries	90	26		11	11			

Table 2-4. Technology Introductions by Technology Type for 1991

Technology type	Total No.	Type of technology introduction				
		Trademark only	Patent only	Know-how only	Patent + know-how	
					Applied for	
All industries	3175	361	205	1972	485	86
Agriculture, forestry and fishing	6			2	3	
Mining						
Construction	26			10	3	1
Manufacturing	3117	346	205	1950	478	85
Food and tobacco	35	17		9	4	3
Textiles	30	23		2	4	
Clothing and textile products	165	152		1		
Outerware	106	96				
Other clothing and textile products	59	56		1		
Wood materials, wood products, furniture, etc.	10	3		2	2	
Pulp, paper products and printing	11	8		1	2	1
Chemical products	201	27	20	47	90	29
Inorganic chemicals	7		1	3	3	
Organic chemicals	44	3	5	11	22	5
Synthetic textiles	2		1	1		
Fat processing, soap, etc.	16	6		2	5	2
Pharmaceuticals	102	11	11	25	51	18
Other chemical products	30	7	2	5	9	4
Oil and coal products	13			6	7	1
Rubber products	13	2	3	6	1	
Tanned leather, tanned leather goods and fur	44	38		2		



Technology type	Total No.	Type of technology introduction				
		Trademark only	Patent only	Know-how only	Patent + know-how	
					Applied for	
Ceramics	31	5		7	16	4
Steel	6			2	3	1
Nonferrous materials	14	1	2	5	6	
Metal products	39	4	1	12	20	5
Machinery and apparatus for general industrial use	281	4	26	158	73	14
Boilers and motors	71			62	9	1
Machinery for use in agriculture, construction, and mining	6			4	1	
Metal processing machinery	25	1	4	5	13	4
Textile machinery	8			4	4	
Machinery for use in special industries	41		11	15	9	
Machinery for general industrial use	91	1	4	51	27	8
Pumps, compressors, blowers	8			5	1	
Power equipment	15	1	1	5	6	1
Chemical machinery and apparatus	60		2	36	18	6
Other machinery for general industrial use	8		1	5	2	1
Other machinery	39	2	7	17	10	1
Transportation machinery	75	3	9	33	26	3
Precision machinery	72	18	9	22	20	6
Electrical machinery and apparatus	1988	8	128	1614	181	11

Technology type	Total No.	Type of technology introduction				
		Trademark only	Patent only	Know-how only	Patent + know-how	
					Applied for	
Electrical machinery for generation, transmission, distribution of electricity and for industrial use	24		3	9	9	2
Electrical machinery, light bulbs, lighting apparatus for public welfare	6			2	4	
Communications equipment	125	3	32	31	47	3
Wire and wireless communication equipment	51	1	22	12	15	
Radio, TV, and sound apparatus	73	2	10	19	31	3
Other communications equipment	1				1	
Electronic applications apparatus	1680	5	47	1527	64	3
Computers	1614	4	23	1503	48	3
Other electronic applications apparatus	66	1	24	24	16	
Parts for use in electronics and communications	148		46	44	53	3
Other electrical machinery	5			1	4	
Other products	89	33	7	21	23	7
Precious metals and personal ornaments	8	8				
Leisure goods	21	14	1	2	3	1
Plastic products	43	5	5	14	16	4
Manufacturing industries not including in other categories	17	6	1	5	4	2
Other industries	26	15		10	1	

Note: The number of patents applied for covers only the period April to December.

Table 2-4. Technology Introductions by Technology Type for 1991  
(Continuation)

Technology type	Total No.	Type of technology introduction				Uncommercialized technology
		Patent + trademark	Trademark + know-how	Patent + trademark + know-how		
					Applied for	
All industries	3175	6	73	73	3	1467
Agriculture, forestry and fishing	6		1			
Mining						
Construction	26		1	12		5
Manufacturing	3117	6	71	61	3	1451
Food and tobacco	35		5			15
Textiles	30		1			14
Clothing and textile products	165	2	9	1		55
Outerware	106	2	7	1		33
Other clothing and textile products	59		2			22
Wood materials, wood products, furniture, etc.	10			3		2
Pulp, paper products and printing	11					2
Chemical products	201		10	7		60
Inorganic chemicals	7					4
Organic chemicals	44		2	1		16
Synthetic textiles	2					1
Fat processing, soap, etc.	16		2	1		5
Pharmaceuticals	102		2	2		45
Other chemical products	30		4	3		9
Oil and coal products	13					1
Rubber products	13		1			2
Tanned leather, tanned leather goods and fur	44		2	2	1	19

Technology type	Total No.	Type of technology introduction				Uncommercialized technology
		Patent + trademark	Trademark + know-how	Patent + trademark + know-how		
					Applied for	
Ceramics	31		3			11
Steel	6		1			3
Nonferrous materials	14					2
Metal products	39		1	1		8
Machinery and apparatus for general industrial use	281		3	17		61
Boilers and motors	71					37
Machinery for use in agriculture, construction, and mining	6		1			1
Metal processing machinery	25		1	1		5
Textile machinery	8					2
Machinery for use in special industries	41			6		13
Machinery for general industrial use	91		1	7		12
Pumps, compressors, blowers	8		1	1		
Power equipment	15			2		2
Chemical machinery and apparatus	60			4		10
Other machinery for general industrial use	8					
Other machinery	39			3		9
Transportation machinery	75		1	3		17
Precision machinery	72		1	2		24
Electrical machinery and apparatus	1986	3	33	21	1	1086



Technology type	Total No.	Type of technology introduction				Uncommercialized technology
		Patent + trademark	Trademark + know-how	Patent + trademark + know-how		
					Applied for	
Electrical machinery for generation, transmission, distribution of electricity and for industrial use	24			3		7
Electrical machinery, light bulbs, lighting apparatus for public welfare	8					2
Communications equipment	125		4	8	1	42
Wire and wireless communication equipment	51			1		15
Radio, TV, and sound apparatus	73		4	7	1	27
Other communications equipment	1					
Electronic applications apparatus	1680		27	7		1001
Computers	1614	3	26	7		964
Other electronic applications apparatus	86		1			37
Parts for use in electronics and communications	148		2	3		33
Other electrical machinery	5					1
Other products	89	1		4	1	29
Precious metals and personal ornaments	8					3
Leisure goods	21			1		12
Plastic products	43			3	1	7
Manufacturing industries not including in other categories	17	1				7
Other industries	26					11

Note: The number of patents applied for and uncommercialized technology covers only the period April to December.

Table 2-5. Technology Introductions by Technology Type and Region for 1991

Technology type	Total No.	Royalties									(D)
		(A)	(B)	(C)	Running royalties						
					Less than 2%	2-5 %	5-8 %	More than 8%	Other	Total	
All industries	3175	205	2970	2151	74	301	282	154	788	1599	394
Agriculture, forestry and fishing	6		6	2					5	5	1
Mining											
Construction	26		26	12		2	11	1	2	16	2
Manufacturing	3117	203	2914	2124	72	295	268	151	776	1562	389
Food and tobacco	35	2	33	14	4	8	8		4	24	10
Textiles	30		30	4		7	12	3	5	27	20
Clothing and textile products	165	1	164	36		35	83	12	15	145	115
Outerware	106	1	105	24		25	46	6	12	89	66
Other clothing and textile products	59		59	12		10	37	6	3	56	49
Wood materials, wood products, furniture, etc.	10		10	2	3	2	1		4	10	5
Pulp, paper products and printing	11	1	10	6	1	1	4	1	1	8	4
Chemical products	201	21	180	134	6	49	27	14	23	119	19
Inorganic chemicals	7	1	6	5		1		1		2	
Organic chemicals	44	3	41	34	2	8	7		7	24	3
Synthetic textiles	2	1	1	1							
Fat processing, soap, etc.	16	1	15	9	2	8		1	1	12	3
Pharmaceuticals	102	11	91	66	1	23	16	11	11	62	8
Other chemical products	30	4	26	19	1	9	4	1	4	19	5
Oil and coal products	13		13	8				1	10	11	2
Rubber products	13	1	12	7		2		2	3	7	1

Technology type	Total No.	Royalties									(D)
		(A)	(B)	(C)	Running royalties						
					Less than 2%	2-5%	5-8%	More than 8%	Other	Total	
Tanned leather, tanned leather goods and fur	44		44	9	2	3	26	5	4	40	36
Ceramics	31	2	29	16	2	4	7	1	7	21	6
Steel	6	1	5	4	1	2				3	
Nonferrous materials	14		14	8	2	5		1	2	10	2
Metal products	39	1	38	28	1	9	9		9	28	7
Machinery and apparatus for general industrial use	281	12	269	211	15	38	29	6	59	147	30
Boilers and motors	71	4	67	57			1	1	8	10	
Machinery for use in agriculture, construction, and mining	6		6	4		2	1		2	5	1
Metal processing machinery	25		25	18	1	9	3		6	19	5
Textile machinery	8	1	7	4			1		4	5	1
Machinery for use in special industries	41		41	34	10	7	8	2	7	34	7
Machinery for general industrial use	91	2	89	68	3	14	8	2	28	55	12
Pumps, compressors, blowers	8		8	5		1	1		4	6	
Power equipment	15		15	7	2	6	1		5	14	5
Chemical machinery and apparatus	60	2	58	50	1	4	5	1	18	29	6
Other machinery for general industrial use	8		8	6		3	1	1	1	6	1
Other machinery	39	5	34	26	1	6	7	1	4	19	4
Transportation machinery	75	3	72	50	2	18	6	3	20	49	4

Technology type	Total No.	Royalties									
		(A)	(B)	(C)	Running royalties						(D)
					Less than 2%	2-5 %	5-8 %	More than 8%	Other	Total	
Precision machinery	72	9	63	35		9	14	13	13	49	20
Electrical machinery and apparatus	1988	136	1852	1515	30	83	22	84	586	805	81
Electrical machinery for generation, transmission, distribution of electricity and for industrial use	24	1	23	17	2	5	3	2	4	16	7
Electrical machinery, light bulbs, lighting apparatus for public welfare	6	3	3	3					2	2	
Communications equipment	125	22	103	82	1	11	1	1	37	51	2
Wire and wireless communication equipment	51	5	46	41	1	3	1	1	7	13	1
Radio, TV, and sound apparatus	73	17	56	40		8			30	38	1
Other communications equipment	1		1	1							
Electronic applications apparatus	1680	86	1592	1313	11	31	15	77	505	639	64
Computers	1614	80	1534	1272	6	25	12	76	461	600	59
Other electronic applications apparatus	66	8	58	41	5	6	3	1	24	39	5
Parts for use in electronics and communications	148	22	126	95	16	33	3	4	37	93	7
Other electrical machinery	5		5	5		3			1	4	1
Other products	89	13	76	37	3	20	20	5	11	59	27
Precious metals and personal ornaments	8	1	7	2		2	5			7	6
Leisure goods	21	1	20	9		6	4	3	3	16	8
Plastic products	43	9	34	21	3	10	4	1	6	24	7



Technology type	Total No.	Royalties									
		(A)	(B)	(C)	Running royalties						(D)
					Less than 2%	2-5 %	5-8 %	More than 8%	Other	Total	
Manufacturing industries not including in other categories	17	2	15	5		2	7	1	2	12	6
Other industries	26	2	24	13	2	4	3	2	5	16	2

- (A): Gratuitous contracts  
 (B): Contracts requiring compensation  
 (C): Having initial payment  
 (D): Having minimum payment

Table 2-6. Payment Status by Technology Type for 1991

Technology type	Code	Total No.	Initial payment only	Initial payment + running royalty	Running royalty only	Running royalty + minimum payment	Initial payment + running royalty + minimum payment
All industries	1	3175	1371	646	559	260	134
Agriculture, forestry and fishing	2	6	1		4		1
Mining	3						
Construction	4	26	10	1	13	1	1
Manufacturing	5	3117	1352	640	533	257	132
Food and tobacco	11	35	9	3	11	8	2
Textiles	12	30	3		7	19	1
Clothing and textile products	13	165	19	3	27	101	14
Outerware	14	106	16	1	22	59	7
Other clothing and textile products	15	59	3	2	5	42	7
Wood materials, wood products, furniture, etc.	16	10		2	3	5	
Pulp, paper products and printing	17	11	2	1	3	1	3
Chemical products	20	201	61	59	41	5	14
Inorganic chemicals	21	7	4	1	1		
Organic chemicals	22	44	17	15	6	1	2
Synthetic textiles	23	2	1				
Fat processing, soap, etc.	24	16	3	5	4	2	1
Pharmaceuticals	25	102	29	31	23	2	6
Other chemical products	26	30	7	7	7		5
Oil and coal products	30	13	2	6	3	2	
Rubber products	31	13	5	2	4	1	
Tanned leather, tanned leather goods and fur	32	44	4	2	2	33	3

Technology type	Code	Total No.	Initial payment only	Initial payment + running royalty	Running royalty only	Running royalty + minimum payment	Initial payment + running royalty + minimum payment
Ceramics	33	31	8	6	9	4	2
Steel	34	6	2	2	1		
Nonferrous materials	35	14	4	3	5	1	1
Metal products	36	39	10	12	9	1	6
Machinery and apparatus for general industrial use	40	281	122	64	53	5	25
Boilers and motors	41	71	57		10		
Machinery for use in agriculture, construction, and mining	42	6	1	2	2		1
Metal processing machinery	43	25	6	7	7		5
Textile machinery	44	8	2	1	3		1
Machinery for use in special industries	45	41	7	21	6	1	6
Machinery for general industrial use	46	91	34	25	18	3	9
Pumps, compressors, blowers	47	8	2	3	3		
Power equipment	48	15	1	3	6	2	3
Chemical machinery and apparatus	49	60	29	16	7	1	5
Other machinery for general industrial use	50	8	2	3	2		1
Other machinery	51	39	15	8	7	1	3
Transportation machinery	52	75	23	25	20	2	2
Precision machinery	53	72	14	14	15	13	7
Electrical machinery and apparatus	60	1988	1047	422	302	35	46

Technology type	Code	Total No.	Initial payment only	Initial payment + running royalty	Running royalty only	Running royalty + minimum payment	Initial payment + running royalty + minimum payment
Electrical machinery for generation, transmission, distribution of electricity and for industrial use	61	24	7	5	4	2	5
Electrical machinery, light bulbs, lighting apparatus for public welfare	62	6	1	2			
Communications equipment	63	125	52	28	21		2
Wire and wireless communication equipment	64	51	33	7	5		1
Radio, TV, and sound apparatus	65	73	18	21	18		1
Other communications equipment	66	1	1				
Electronic applications apparatus	67	1680	953	327	248	31	33
Computers	68	1614	934	309	232	30	29
Other electronic applications apparatus	69	66	19	18	16	1	4
Parts for use in electronics and communications	70	148	33	57	29	2	5
Other electrical machinery	71	5	1	3			1
Other products	80	89	17	14	18	21	6
Precious metals and personal ornaments	81	8			1	4	2
Leisure goods	82	21	4	4	4	7	1
Plastic products	83	43	10	8	9	4	3
Manufacturing industries not including in other categories	84	17	3	2	4	6	
Other industries	90	26	8	5	9	2	



Table 2-7. Contract Status (Contract duration) by Technology Type for 1991

Technology type	Total No.	Contract term						
		Less than 1 year	Less than 5 years	Less than 10 years	Less than 15 years	15 years or longer	For term of patent	Other
All industries	3175	121	791	368	224	61	290	1320
Agriculture, forestry and fishing	6		4		1			1
Mining								
Construction	26		5	15	3	1		2
Manufacturing	3117	120	768	352	217	59	290	1311
Food and tobacco	35	1	10	4	9	4		7
Textiles	30		19	5			3	3
Clothing and textile products	165	8	111	32	6			8
Outerware	106	7	63	25	4			7
Other clothing and textile products	59	1	48	7	2			1
Wood materials, wood products, furniture, etc.	10	2	3	2	1		2	
Pulp, paper products and printing	11	1	4	1	2			3
Chemical products	201	10	27	28	18	10	41	67
Inorganic chemicals	7		1	1		2	1	2
Organic chemicals	44	2	7	2	5	6	11	11
Synthetic textiles	2		1				1	
Fat processing, soap, etc.	16	1	1	7	2			5
Pharmaceuticals	102	7	10	12	7	2	25	39
Other chemical products	30		7	6	4		3	10
Oil and coal products	13		1	1		4		7
Rubber products	13		3	1	1	1	2	5
Tanned leather, tanned leather goods and fur	44	2	32	5	3			2

Technology type	Total No.	Contract term						
		Less than 1 year	Less than 5 years	Less than 10 years	Less than 15 years	15 years or longer	For term of patent	Other
Ceramics	31	1	8	9	5		3	5
Steel	6				3		1	2
Nonferrous materials	14		4	3	2	1		4
Metal products	39		7	6	7	4	3	9
Machinery and apparatus for general industrial use	281	22	71	43	47	2	36	60
Boilers and motors	71	10	33	3	5			20
Machinery for use in agriculture, construction, and mining	6		2		2		1	1
Metal processing machinery	25	1	2	8	3		6	5
Textile machinery	8		3		2		3	
Machinery for use in special industries	41	3	2	7	12		12	5
Machinery for general industrial use	91	7	20	17	21		6	20
Pumps, compressors, blowers	8	1		3	4			
Power equipment	15		6	4	4		1	
Chemical machinery and apparatus	60	5	12	9	11		3	20
Other machinery for general industrial use	8	1	2	1	2		2	
Other machinery	39	1	9	8	2	2	8	9
Transportation machinery	75	7	10	21	16	1	11	9
Precision machinery	72	3	20	10	4	4	13	18
Electrical machinery and apparatus	1988	61	408	166	85	23	161	1084

Technology type	Total No.	Contract term						
		Less than 1 year	Less than 5 years	Less than 10 years	Less than 15 years	15 years or longer	For term of patent	Other
Electrical machinery for generation, transmission, distribution of electricity and for industrial use	24		6	7	4		4	3
Electrical machinery, light bulbs, lighting apparatus for public welfare	6			1			4	1
Communications equipment	125	4	11	18	25	1	38	28
Wire and wireless communication equipment	51	2	5	5	3		22	14
Radio, TV, and sound apparatus	73	1	6	13	22	1	16	14
Other communications equipment	1	1						
Electronic applications apparatus	1680	52	363	106	41	18	68	1032
Computers	1614	50	351	96	37	16	45	1019
Other electronic applications apparatus	66	2	12	10	4	2	23	13
Parts for use in electronics and communications	148	3	27	33	15	3	47	20
Other electrical machinery	5	2	1	1		1		
Other products	89	2	30	15	8	5	11	18
Precious metals and personal ornaments	8		4	2	1	1		
Leisure goods	21		12	3	1		1	4
Plastic products	43	1	6	8	6	2	10	10
Manufacturing industries not including in other categories	17	1	8	2		2		4
Other industries	26	1	14	1	3	1		6

Table 2-8. Contract Status (Regions in which sales are possible) by Technology Type for 1991

Technology type	Total No.	Regions in which sales are allowed					
		Japan only	Korea and Taiwan	Through-out Asia	U.S. and Europe	World-wide	Other
All industries	2492	1541	22	100	1	689	139
Agriculture, forestry and fishing	3	2	1				
Mining							
Construction	24	23		1			
Manufacturing	2449	1500	21	99	1	689	139
Food and tobacco	28	21		1		6	
Textiles	23	18		1		2	2
Clothing and textile products	122	112	1	8			1
Outerware	80	71	1	7			1
Other clothing and textile products	42	41		1			
Wood materials, wood products, furniture, etc.	7	6		1			
Pulp, paper products and printing	6	5				1	
Chemical products	160	97	4	7	1	31	20
Inorganic chemicals	6	3				3	
Organic chemicals	35	16	1	1		12	5
Synthetic textiles	2	1				1	
Fat processing, soap, etc.	12	10				1	1
Pharmaceuticals	83	54	2	4	1	11	11
Other chemical products	22	13	1	2		3	3
Oil and coal products	12	10				2	
Rubber products	11	3				7	1
Tanned leather, tanned leather goods and fur	35	33		2			



Technology type	Total No.	Regions in which sales are allowed					
		Japan only	Korea and Taiwan	Through-out Asia	U.S. and Europe	World-wide	Other
Ceramics	28	15	2	3		7	1
Steel	6					4	2
Nonferrous materials	13	6		1		4	2
Metal products	29	12				9	8
Machinery and apparatus for general industrial use	215	111	8	35		32	29
Boilers and motors	51	43				5	3
Machinery for use in agriculture, construction, and mining	5		1	1		1	2
Metal processing machinery	19	10		3		2	4
Textile machinery	7	1				4	2
Machinery for use in special industries	31	7	1	9		6	8
Machinery for general industrial use	72	39	5	16		5	7
Pumps, compressors, blowers	7	3		1		1	2
Power equipment	14	3	2	6		2	1
Chemical machinery and apparatus	44	30	3	7			4
Other machinery for general industrial use	7	3		2		2	
Other machinery	30	11	1	6		9	3
Transportation machinery	58	37		3		11	7
Precision machinery	56	22		7		21	6
Electrical machinery and apparatus	1569	953	4	19		537	56

Technology type	Total No.	Regions in which sales are allowed					
		Japan only	Korea and Taiwan	Through-out Asia	U.S. and Europe	World-wide	Other
Electrical machinery for generation, transmission, distribution of electricity and for industrial use	17	5		1		9	2
Electrical machinery, light bulbs, lighting apparatus for public welfare	5	2				3	
Communications equipment	100	9				84	7
Wire and wireless communication equipment	39	5				30	4
Radio, TV, and sound apparatus	61	4				54	3
Other communications equipment							
Electronic applications apparatus	1341	925	4	18		358	36
Computers	1287	921	4	17		316	29
Other electronic applications apparatus	54	4		1		42	7
Parts for use in electronics and communications	102	11				80	11
Other electrical machinery	4	1				3	
Other products	71	39	2	11		15	4
Precious metals and personal ornaments	7	5		2			
Leisure goods	20	11	1	2		6	
Plastic products	29	10	1	6		9	3
Manufacturing industries not including in other categories	15	13		1			1
Other industries	16	16					

Note: Number of contracts from April through December.

Table 2-9. Contract Status (Capitalization) by Technology Type for 1991

Technology type	Total No.	Capital								
		Less than \$50 million	Less than \$100 million	Less than \$500 million	Less than \$1 billion	Less than \$5 billion	Less than \$10 billion	Less than \$50 billion	More than \$50 billion	Unknown
All industries	3175	268	268	516	68	300	158	570	1004	23
Agriculture, forestry and fishing	6	2		2	1				1	
Mining										
Construction	26	2	5	3	1	6		2	7	
Manufacturing	3117	258	261	507	66	290	158	564	991	22
Food and tobacco	35	5	2	5		12	1	7	3	
Textiles	30	10	1	3	1	4	2	3	6	
Clothing and textile products	165	40	20	28	6	14	5	33	19	
Outerware	106	21	13	12	4	11	5	26	14	
Other clothing and textile products	59	19	7	16	2	3		7	5	
Wood materials, wood products, furniture, etc.	10	1	1	4		1	3			
Pulp, paper products and printing	11	2	1	2		2	1	1	2	
Chemical products	201	15	7	11	10	28	21	76	31	2
Inorganic chemicals	7		1	1		1		2	2	
Organic chemicals	44	1		2	1	8	4	16	11	1
Synthetic textiles	2							2		
Fat processing, soap, etc.	16	1	2	3		2	2	5	1	
Pharmaceuticals	102	4	2	3	8	12	14	43	15	1
Other chemical products	30	9	2	2	1	5	1	8	2	
Oil and coal products	13					3	3	6	1	
Rubber products	13	1			1	1	1	8	1	
Tanned leather, tanned leather goods and fur	44	19	9	8	2	3		2	1	

Technology type	Total No.	Capital								
		Less than ¥50 million	Less than ¥100 million	Less than ¥500 million	Less than ¥1 billion	Less than ¥5 billion	Less than ¥10 billion	Less than ¥50 billion	More than ¥50 billion	Unknown
Ceramics	31	7	1	3	2			9	9	
Steel	6						1		5	
Nonferrous materials	14		2		2	1		6	3	
Metal products	39	4	4	7	2	5	4	6	7	
Machinery and apparatus for general industrial use	281	29	16	30	8	26	14	54	100	4
Boilers and motors	71	2				8		2	56	3
Machinery for use in agriculture, construction, and mining	6		1	1	1	2			1	
Metal processing machinery	25	2	3	2		1	1	11	5	
Textile machinery	8	1		3	2	1			1	
Machinery for use in special industries	41	7	2	11	1	5	2	8	5	
Machinery for general industrial use	91	10	8	10	3	6	8	20	25	1
Pumps, compressors, blowers	8	1		3		1		3		
Power equipment	16	2	2	3	1	1		4	2	
Chemical machinery and apparatus	60	7	5	4	2	4	6	12	19	1
Other machinery for general industrial use	8		1				2	1	4	
Other machinery	39	7	2	3	1	3	3	13	7	
Transportation machinery	75	4		7		8	8	15	32	1
Precision machinery	72	6	4	11	1	11	3	29	7	
Electrical machinery and apparatus	1988	96	186	376	28	161	86	289	751	15



Technology type	Total No.	Capital								
		Less than \$50 million	Less than \$100 million	Less than \$500 million	Less than \$1 billion	Less than \$5 billion	Less than \$10 billion	Less than \$50 billion	More than \$50 billion	Unknown
Electrical machinery for generation, transmission, distribution of electricity and for industrial use	24	1	1	4			5	5	8	
Electrical machinery, light bulbs, lighting apparatus for public welfare	6				1			2	3	
Communications equipment	125	2	2	6	5	9	12	21	68	
Wire and wireless communication equipment	51			3	1	1	3	11	32	
Radio, TV, and sound apparatus	73	2	2	3	4	8	8	10	36	
Other communications equipment	1						1			
Electronic applications apparatus	1680	93	182	358	21	142	61	242	566	15
Computers	1614	89	181	354	19	138	60	234	524	15
Other electronic applications apparatus	66	4	1	4	2	4	1	8	42	
Parts for use in electronics and communications	148		1	6	1	9	7	18	106	
Other electrical machinery	5			2		1	1	1		
Other products	89	19	7	12	3	10	5	20	13	
Precious metals and personal ornaments	8	5		1		1		1		
Leisure goods	21	5	1	2	1		1	10	1	
Plastic products	43	5	2	7	2	9	4	7	7	
Manufacturing industries not including in other categories	17	4	4	2				2	5	
Other industries	26	6	2	4		4		4	5	1

Table 2-10. Contract Status (Monopoly rights, renewal rights, cross-licensing, stock acquisition) by Technology Type for 1991

Technology type	Total No.	Designated technology		Other conditions			
		Total No.	More than ¥100 million	Monopoly rights	Renewal rights	Cross-licensing	Stock acquisition
All industries	3175	1539	638	1170	1042	122	13
Agriculture, forestry and fishing	6			5	1		
Mining							
Construction	26			6	7		
Manufacturing	3117	1531	632	1144	1028	121	13
Food and tobacco	35			23	14		
Textiles	30	1		22	17	1	
Clothing and textile products	165	33	29	150	94		
Outerware	106	23	21	100	66		
Other clothing and textile products	59	10	8	50	28		
Wood materials, wood products, furniture, etc.	10			8	5		
Pulp, paper products and printing	11			4	4		
Chemical products	201	1	1	79	64	5	2
Inorganic chemicals	7			2	1		1
Organic chemicals	44			11	15	3	
Synthetic textiles	2					1	
Fat processing, soap, etc.	16			9	6		
Pharmaceuticals	102			40	31	1	1
Other chemical products	30	1	1	17	11		
Oil and coal products	13			3	1		
Rubber products	13	2	2	3	7	3	
Tanned leather, tanned leather goods and fur	44	35	32	38	18		

Technology type	Total No.	Designated technology		Other conditions			
		Total No.	More than \$100 million	Monopoly rights	Renewal rights	Cross-licensing	Stock acquisition
Ceramics	31	1	1	16	13	2	
Steel	6			1	3	1	
Nonferrous materials	14	1	1	4	5	2	1
Metal products	39	2	1	20	12	1	
Machinery and apparatus for general industrial use	281	61	33	121	80	12	5
Boilers and motors	71	42	19	9	8	9	
Machinery for use in agriculture, construction, and mining	6			4	2		
Metal processing machinery	25			12	9		
Textile machinery	8			2	3		
Machinery for use in special industries	41	5	5	25	18	1	1
Machinery for general industrial use	91	10	7	48	27	2	2
Pumps, compressors, blowers	8	1	1	6	2		1
Power equipment	15	1	1	15	3		
Chemical machinery and apparatus	60	8	5	22	20	2	1
Other machinery for general industrial use	8			5	2		
Other machinery	39	4	2	21	13		2
Transportation machinery	75	22	15	27	23	5	
Precision machinery	72	9	9	39	19	6	
Electrical machinery and apparatus	1988	1350	496	531	620	78	5

Technology type	Total No.	Designated technology		Other conditions			
		Total No.	More than \$100 million	Monopoly rights	Renewal rights	Cross-licensing	Acquisition
Electrical machinery for generation, transmission, distribution of electricity and for industrial use	24			13	8		
Electrical machinery, light bulbs, lighting apparatus for public welfare	6				1	2	
Communications equipment	125	17	13	20	38	7	
Wire and wireless communication equipment	51	8	4	6	17	5	
Radio, TV, and sound apparatus	73	9	9	14	21	2	
Other communications equipment	1						
Electronic applications apparatus	1680	1267	427	477	513	22	4
Computers	1614	1259	421	463	492	19	4
Other electronic applications apparatus	68	8	6	14	21	3	
Parts for use in electronics and communications	148	65	56	20	58	47	1
Other electrical machinery	5	1		1	2		
Other products	89	13	12	55	29	5	
Precious metals and personal ornaments	8	3	3	8	4		
Leisure goods	21	5	5	12	6		
Plastic products	43			25	16	5	
Manufacturing industries not including in other categories	17	5	4	10	3		
Other industries	26	8	6	13	6	1	

Note: Number of contracts from April through December.

Table 2-11. Status of Revised Contracts for 1991

Technology type code	Total No.	Designated technology		Contract term				Royalties			
		Total No.	Payment in excess of ¥100 million	Extension	Shortening	Other	Total	Initial payment			
								Increase	Decrease	Other	Total
0 1	1200	474	144	455	6	32	493	280	24	7	311
0 2											
0 3											
0 4	10	1		5			5	3			3
0 5	1174	472	144	438	6	32	476	267	24	7	298
1 1	16			10			10	1			1
1 2	30	3		22			22	3			3
1 3	115	40	15	78		1	79	3		1	4
1 4	73	32	12	47			47	1		1	2
1 5	42	8	3	31		1	32	2			2
1 6	11			5			5				
1 7	4			3			3				
2 0	100	1		20		5	25	9	2		11
2 1	5			2		1	3	1			1
2 2	20	1		3		2	5	2			2
2 3											
2 4	11			5			5		1		1
2 5	44			6		2	8	5			5
2 6	20			4			4	1	1		2
3 0	9			3			3	3		1	4



Technology type code	Total No.	Designated technology		Contract term				Royalties			
		Total No.	Payment in excess of \$100 million	Exten- sion	Short- ening	Other	Total	Initial payment			
								In- crease	De- crease	Other	Total
3 1	3	1		1	1	1	3				
3 2	19	13	3	18			18				
3 3	15			8		1	9	1	1		2
3 4	6			3	2		5				
3 5	7	2	1	3			3	3			3
3 6	18			12			12	1			1
4 0	162	15	5	75		6	81	24	1	1	28
4 1	34	10	2	14		2	16	13		1	14
4 2	6			5			5				
4 3	10			1			1	2			2
4 4	2			1			1				
4 5	13			4			4	1			1
4 6	83	5	3	43		4	47	8	1		9
4 7	6	1	1	4		1	5	1			1
4 8	19	1		11		1	12	2	1		3
4 9	46	1		23		1	24	3			3
5 0	12	2	2	5		1	6	2			2
5 1	14			7			7				
5 2	60	19	3	26			26	17		1	18
5 3	27	11	1	18	1		19	4			4

Technology type code	Total No.	Designated technology		Contract term				Royalties			
		Total No.	Payment in excess of \$100 million	Exten- sion	Short- ening	Other	Total	Initial payment			
								In- crease	De- crease	Other	Total
60	519	349	113	107	2	15	124	195	18	3	216
61	10			4		1	5		1		1
62	3			1			1	1			1
63	47	14	3	12		1	13	9			9
64	21	12	2	5		1	6	8			8
65	28	2	1	7			7	1			1
66											
67	409	310	106	71	2	13	86	178	13	2	193
68	396	307	105	67	2	13	82	175	13	2	190
69	13	3	1	4			4	3			3
70	43	21	4	17			17	7	3	1	11
71	7	4		2			2		1		1
80	53	18	3	26		3	29	3	2		5
81	4	2		3			3				
82	12	4	2	9			9				
83	18			5		2	7	2	1		3
84	19	12	1	9		1	10	1	1		2
90	16	1		12			12	10			10

Technology type code	Total No.	Royalties								Position succession
		Running royalties				Minimum payment				
		In- crease	De- crease	Other	Total	In- crease	De- crease	Other	Total	
0 1	1200	307	137	55	499	154	25	3	182	195
0 2										
0 3										
0 4	10		3		3					1
0 5	1174	305	134	55	494	154	25	3	182	193
1 1	16	2	1	1	4	2	1		3	5
1 2	30	5	8	1	14	14			14	3
1 3	115	26	8	5	39	65	7	1	73	12
1 4	73	17	4	3	24	39	4	1	44	10
1 5	42	9	4	2	15	26	3		29	2
1 6	11	1	4		5	2			2	1
1 7	4			1	1	1			1	1
2 0	100	20	8	2	30	1		1	2	38
2 1	5	2			2	1			1	3
2 2	20	3	5		8					8
2 3										
2 4	11	2	2		4					3
2 5	44	5	1	2	8			1	1	20
2 6	20	8			8					4

Technology type code	Total No.	Royalties								Position succession
		Running royalties				Minimum payment				
		In- crease	De- crease	Other	Total	In- crease	De- crease	Other	Total	
30	9	3	1		4	1			1	1
31	3	1			1	1			1	
32	19					13	2		15	1
33	15	2	3	2	7	2			2	4
34	6	1	1	1	3					1
35	7		3		3					
36	18	4	1	2	7	3	1		4	8
40	162	19	30	12	61	3	3	1	7	38
41	34	6	3		9					3
42	6	1	5		6					
43	10	2	1		3	1			1	7
44	2		1		1					
45	13		1	5	6		2		2	3
46	83	9	18	6	33	2	1	1	4	20
47	6	1	1		2					1
48	19	3	3	1	7	1	1		2	3
49	46	3	10	5	18	1			1	14
50	12	2	4		6			1	1	2
51	14	1	1	1	3					5
52	60	10	7	1	18	1			1	12
53	27	1	3		4	6	1		7	2

Technology/ type code	Total No.	Royalties								Position succession
		Running royalties				Minimum payment				
		In- crease	De- crease	Other	Total	In- crease	De- crease	Other	Total	
60	519	197	50	26	273	30	6		36	59
61	10	2		1	3	1			1	1
62	3	1	1		2					
63	47	15	6	3	24					8
64	21	6	3		9					3
65	26	9	3	3	15					5
66										
67	409	166	38	18	222	29	5		34	43
68	396	163	35	17	215	29	5		34	42
69	13	3	3	1	7					1
70	43	11	5	4	20		1		1	7
71	7	2			2					
80	53	13	6	1	20	9	4		13	7
81	4	2			2	2			2	
82	12	5			5	4	2		6	
83	18	3	5		8		1		1	4
84	19	3	1	1	5	3	1		4	3
90	16	2			2					1



Technology type code	Total No.	Monopoly rights				Re-implementation rights			
		Gain	Loss	Other	Total	Gain	Loss	Other	Total
0 1	1200	11	8		19	21	5		26
0 2									
0 3									
0 4	10								
0 5	1174	11	8		19	21	5		26
1 1	16	1			1				
1 2	30					1			1
1 3	115	1			1	3			3
1 4	73	1			1	3			3
1 5	42								
1 6	11								
1 7	4								
2 0	100		1		1	3			3
2 1	5								
2 2	20								
2 3									
2 4	11								
2 5	44		1		1	3			3

Technology type code	Total No.	Monopoly rights				Re-implementation rights			
		Gain	Loss	Other	Total	Gain	Loss	Other	Total
26	20								
30	9								
31	3								
32	19								
33	15	1			1				
34	6								
35	7								
36	18					1			1
40	162	3	2		5	1	2		3
41	34								
42	6								
43	10								
44	2								
45	13		1		1				
46	83	3	1		4	1	2		3
47	6					1			1
48	19	1			1				
49	46	2	1		3		2		2
50	12								
51	14								

Technology type code	Total No.	Monopoly rights				Re-implementation rights			
		Gain	Loss	Other	Total	Gain	Loss	Other	Total
52	60					2			2
53	27					1			1
60	519	3	4		7	8	3		11
61	10					1			1
62	3		1		1				
63	47	1			1	1			1
64	21	1			1	1			1
65	26								
66									
67	409	2	1		3	4	3		7
68	336	2	1		3	4	3		7
69	13								
70	43		2		2	1			1
71	7					1			1
80	53	2	1		3	1			1
81	4								
82	12	1	1		2				
83	18	1			1				
84	19					1			1
90	16								

Technology type code	Total No.	Sales territory				Range of technology				Other
		Expan- sion	Con- trac- tion	Other	Total	Expan- sion	Con- trac- tion	Other	Total	
0 1	1200	30	20	2	52	284	7	29	300	122
0 2										
0 3										
0 4	10					1		3	4	1
0 5	1174	30	20	2	52	282	7	26	295	120
1 1	16					1			1	
1 2	30	1			1	2			2	2
1 3	115	4	4		8	28			28	7
1 4	73	1	4		5	23			23	4
1 5	42	3			3	3			3	3
1 6	11					2		2	4	2
1 7	4	1			1					
2 0	100	4		1	5	12	1	3	16	12
2 1	5	1			1					1
2 2	20									4
2 3										
2 4	11	1			1	1	1	1	3	2
2 5	44	1		1	2	6		2	8	4
2 6	20	1			1	5			5	1

Technology type code	Total No.	Sales territory				Range of technology				Other
		Expan- sion	Con- trac- tion	Other	Total	Expan- sion	Con- trac- tion	Other	Total	
3 0	9					2			2	1
3 1	3					1			1	1
3 2	19	1			1	4			4	2
3 3	15	3	1		4	1	1	1	3	3
3 4	6							1	1	1
3 5	7					1			1	3
3 6	18	1			1	2		1	3	
4 0	162	9	5		14	18		9	27	18
4 1	34		1		1	5			5	3
4 2	6	2			2					
4 3	10					1			1	
4 4	2							1	1	
4 5	13					2			2	1
4 6	83	7	4		11	8		8	16	12
4 7	6					1			1	1
4 8	19	1			1	2		4	6	4
4 9	46	6	4		10	2		3	5	6
5 0	12					3		1	4	1
5 1	14					2			2	2



Technology type code	Total No.	Sales territory				Range of technology				Other
		Expan- sion	Con- trac- tion	Other	Total	Expan- sion	Con- trac- tion	Other	Total	
52	60		4		4	9	1	3	13	9
53	27	1	1		2	5		1	6	4
60	519	4	3		7	185	3	5	173	46
61	10									2
62	3									1
63	47	1	1		2	15		3	18	2
64	21					6		1	7	2
65	28	1	1		2	9		2	11	
66										
67	409	3	2		5	142	2	1	145	38
68	396	3	2		5	139	2	1	142	38
69	13					3			3	
70	43					7	1	1	9	5
71	7					1			1	
80	53	1	2	1	4	11	1		12	9
81	4					1			1	
82	12					4			4	1
83	18	1	2	1	4	3	1		4	3
84	19					3			3	5
90	18					1			1	1

Note: The number of contracts for designated technologies is from April to December only.

Table 2-12. Number of Introductions by Industry of the Acquiring Company for 1991

Industry	No. of companies	No. of technology introduction contracts
01 All industries	662	1855
02 Agriculture, forestry, and fishing	3	4
03 Mining	5	7
04 Construction	32	57
05 Manufacturing	605	1708
06 Food and tobacco	15	27
07 Textiles	45	100
08 Pulp and paper products	6	6
09 Publishing and printing	8	12
10 Chemicals	107	206
11 General chemicals and synthetic textiles	39	102
12 Fat processing, paints	15	21
13 Pharmaceuticals	39	64
14 Other chemical products	14	19
15 Oil and coal products	14	41
16 Plastic products	15	25
17 Rubber products	11	20
18 Ceramics	13	21
19 Steel	12	56
20 Nonferrous metals	14	27
21 Metal products	15	16
22 Machinery	92	197
23 Electrical machinery	134	684
24 Electrical machinery and apparatus	27	219
25 Communications, electronic, and electric measurement equipment	107	465
26 Transportation machinery	42	118
27 Automotive	34	63
28 Other transportation machinery	8	55
29 Precision machinery	25	88
30 Other industries	37	64
31 Transport, communications, and public service	17	79
490 Wholesaling of various products	19	131
500 Wholesaling of textiles, machinery and apparatus, and building materials	103	598
510 Wholesaling of clothing, food, furniture etc.	73	100
520 Agents and middlemen	1	1
530 Retailers of various products	10	21
540 Retailers of cloth, clothing, and other personal items	4	5
550 Retailers of food and drink	1	1
560 Retailers of automobiles and bicycles		

Industry	No. of companies	No. of technology introduction contracts
570 Retailers of furniture, tools, and utensils		
580 Other retailers	5	5
590 General restaurants	2	2
600 Other restaurants		
610 Bank and trust	9	18
620 Agriculture, forestry and fishing finance		
630 Special purpose finance for small-medium size companies, the general public, and housing	3	5
640 Supplemental finance and collaterals		
650 Investment		
660 Securities, product transactions	4	4
670 Insurance	6	9
680 Insurance agencies and insurance services		
690 Real estate transactions		
700 Real estate rental and management	4	5
720 Leasing of goods	1	1
730 Inns and other lodgings	7	160
740 Household services	1	1
750 Cleaning, hairdressing, and washing		
760 Other services for individuals	1	1
770 Movies		
780 Entertainment (excluding movies)	3	3
800 Parking lots	2	4
810 Automotive repair		
820 Other repairs	2	2
830 Cooperatives (not categorized elsewhere)	1	1
840 Information services, surveys, advertising		
850 Other business services		
860 Specialized services (not categorized elsewhere)	71	159
870 Medicine	2	2
880 Insurance health	26	59
890 Waste management		
900 Religion	1	1
910 Education		
920 Social insurance, social welfare	3	3
930 Academic research institutes		
940 Political, economic, and cultural organizations	7	15
950 Other services	1	1
960 Foreign public service		
970 National public service	1	1
980 Local public service		
990 Unclassifiable industries	1	1
Total	1037	3175

Table 2-13. Number of Introductions by Country by Industry of the Acquiring Company for 1991

Industry	No. of companies	No. of technology introduction contracts
01 All industries	662	1855
02 Agriculture, forestry, and fishing	3	4
03 Mining	5	7
04 Construction	32	57
05 Manufacturing	605	1708
06 Food and tobacco	15	27
07 Textiles	45	100
08 Pulp and paper products	6	6
09 Publishing and printing	8	12
10 Chemicals	107	206
11 General chemicals and synthetic textiles	39	102
12 Fat processing, paints	15	21
13 Pharmaceuticals	39	64
14 Other chemical products	14	19
15 Oil and coal products	14	41
16 Plastic products	15	25
17 Rubber products	11	20
18 Ceramics	13	21
19 Steel	12	56
20 Nonferrous metals	14	27
21 Metal products	15	16
22 Machinery	92	197
23 Electrical machinery	134	684
24 Electrical machinery and apparatus	27	219
25 Communications, electronic, and electric measurement equipment	107	465
26 Transportation machinery	42	118
27 Automotive	34	63
28 Other transportation machinery	8	55
29 Precision machinery	25	88
30 Other industries	37	64
31 Transport, communications, and public service	17	79
490 Wholesaling of various products	19	131
500 Wholesaling of textiles, machinery and apparatus, and building materials	103	598
510 Wholesaling of clothing, food, furniture etc.	73	100
520 Agents and middlemen	1	1
530 Retailers of various products	10	21
540 Retailers of cloth, clothing, and other personal items	4	5
550 Retailers of food and drink	1	1
560 Retailers of automobiles and bicycles		

Industry	No. of companies	No. of technology introduction contracts
570 Retailers of furniture, tools, and utensils		
580 Other retailers	5	5
590 General restaurants	2	2
600 Other restaurants		
610 Bank and trust	9	18
620 Agriculture, forestry and fishing finance		
630 Special purpose finance for small-medium size companies, the general public, and housing	3	5
640 Supplemental finance and collaterals		
650 Investment		
660 Securities, product transactions	4	4
670 Insurance	6	9
680 Insurance agencies and insurance services		
690 Real estate transactions		
700 Real estate rental and management	4	5
720 Leasing of goods	1	1
730 Inns and other lodgings	7	160
740 Household services	1	1
750 Cleaning, hairdressing, and washing		
760 Other services for individuals	1	1
770 Movies		
780 Entertainment (excluding movies)	3	3
800 Parking lots	2	4
810 Automotive repair		
820 Other repairs	2	2
830 Cooperatives (not categorized elsewhere)	1	1
840 Information services, surveys, advertising		
850 Other business services		
860 Specialized services (not categorized elsewhere)	71	159
870 Medicine	2	2
880 Insurance health	26	59
890 Waste management		
900 Religion	1	1
910 Education		
920 Social insurance, social welfare	3	3
930 Academic research institutes		
940 Political, economic, and cultural organizations	7	15
950 Other services	1	1
960 Foreign public service		
970 National public service	1	1
980 Local public service		
990 Unclassifiable industries	1	1
Total	1037	3175



**Table 2-14. Type of Technology Introduction by Industry of the Acquiring Company for 1991**

Type of industry	Total No.	Type of technology introduction		
		Trade-mark only	Patent only	Know-how only
01 All industries	1855	158	182	989
02 Agriculture, forestry, and fishing	4			1
03 Mining	7			5
04 Construction	57			45
05 Manufacturing	1708	158	181	861
06 Food and tobacco	27	7	2	10
07 Textiles	100	67	3	15
08 Pulp and paper products	6	4		
09 Publishing and printing	12	2		7
10 Chemicals	206	13	21	75
11 General chemicals and synthetic textiles	102	3	9	48
12 Fat processing, paints	21	2	1	7
13 Pharmaceuticals	64	5	7	15
14 Other chemical products	19	3	4	5
15 Oil and coal products	41	1	1	30
16 Plastic products	25	2	1	10
17 Rubber products	20	8	3	4
18 Ceramics	21	3		6
19 Steel	56		2	36
20 Nonferrous metals	27	2	4	11
21 Metal products	16	1	2	7
22 Machinery	197	3	19	106
23 Electrical machinery	684	7	92	418
24 Electrical machinery and apparatus	219		34	128
25 Communications, electronic, and electric measurement equipment	465	7	58	290
26 Transportation machinery	118	3	9	71
27 Automotive	63	3	7	34
28 Other transportation machinery	55		2	37
29 Precision machinery	88	10	18	38
30 Other industries	64	25	4	17
31 Transport, communications, and public service	79		1	77
Wholesaling of various products	131	32		87
Wholesaling of textiles, machinery and apparatus, and building materials	598	21	22	507
Wholesaling of clothing, food, furniture etc.	100	68	1	10
Agents and middlemen	1	1		
Retailers of various products	21	21		

Type of industry	Total No.	Type of technology introduction		
		Trade-mark only	Patent only	Know-how only
Retailers of various products	5	3		
Retailers of cloth, clothing, and other personal items	1			
Retailers of food and drink				
Retailers of automobiles and bicycles				
Retailers of furniture, tools, and utensils				
Other retailers	5	5		
General restaurants	2	2		
Other restaurants				
Bank and trust	18			18
Agriculture, forestry and fishing finance				
Special purpose finance for small-medium size companies, the general public, and housing	5	1		4
Supplemental finance and collaterals				
Investment				
Securities, product transactions	4			4
Insurance	9			9
Insurance agencies and insurance services				
Real estate transactions	5	3		
Real estate rental and management	1	1		
Leasing of goods	160	2		158
Inns and other lodgings	1	1		
Household services				
Cleaning, hairdressing, and washing	1	1		
Other services for individuals				
Movies	3			
Entertainment (excluding movies)	4	4		
Parking lots				
Automotive repair	2			1
Other repairs	1			
Cooperatives (not categorized elsewhere)				
Information services, surveys, advertising	159			151
Other business services	2			1
Specialized services (not categorized elsewhere)	59	37		12
Medicine				
Health insurance				
Waste management	1			1
Religion				
Education	3			3

Type of industry	Total No.	Type of technology introduction		
		Trade- mark only	Patent only	Know- how only
Social insurance, social welfare				
Academic research institutes	15			15
Political, economic, and cultural organizations	1			1
Other services				
Foreign public service				
National public service	1			1
Local public service				
Unclassifiable industries	1			
Total	3175	361	205	1972

**Table 2-14. Type of Technology Introduction by Industry of the Acquiring Company for 1991 (Continuation)**

Type of industry	Total No.	Type of technology introduction			
		Patent + know-how	Patent + trade-mark	Trade-mark + know-how	Patent + trade-mark + know-how
01 All industries	1855	423	5	47	51
02 Agriculture, forestry, and fishing	4	2		1	
03 Mining	7	2			
04 Construction	57	5		1	6
05 Manufacturing	1708	414	5	44	45
06 Food and tobacco	27	3		4	1
07 Textiles	100	13		2	
08 Pulp and paper products	6	2			
09 Publishing and printing	12	2		1	
10 Chemicals	206	82		9	6
11 General chemicals and synthetic textiles	102	39		2	1
12 Fat processing, paints	21	7		3	1
13 Pharmaceuticals	64	34		2	1
14 Other chemical products	19	2		2	3
15 Oil and coal products	41	9			
16 Plastic products	25	12			
17 Rubber products	20	4			1
18 Ceramics	21	11			1
19 Steel	56	11		4	3
20 Nonferrous metals	27	9			1
21 Metal products	16	5			1
22 Machinery	197	51		6	12
23 Electrical machinery	684	140	3	13	11
24 Electrical machinery and apparatus	219	50		5	2
25 Communications, electronic, and electric measurement equipment	465	90	3	8	9
26 Transportation machinery	118	31			4
27 Automotive	63	17			2
28 Other transportation machinery	55	14			2
29 Precision machinery	88	19		2	1
30 Other industries	64	10	2	3	3
31 Transport, communications, and public service	79			1	

Type of industry	Total No.	Type of technology introduction			
		Patent + know-how	Patent + trade-mark	Trade-mark + know-how	Patent + trade-mark + know-how
Wholesaling of various products	131	8	1	2	1
Wholesaling of textiles, machinery and apparatus, and building materials	598	35		2	11
Wholesaling of clothing, food, furniture etc.	100	8		9	4
Agents and middlemen	1				
Retailers of various products	21				
Retailers of cloth, clothing, and other personal items	5			2	
Retailers of food and drink	1	1			
Retailers of automobiles and bicycles					
Retailers of furniture, tools, and utensils					
Other retailers	5				
General restaurants	2				
Other restaurants					
Bank and trust	18				
Agriculture, forestry and fishing finance					
Special purpose finance for small-medium size companies, general public, and housing	5				
Supplemental finance and collaterals					
Investment					
Securities, product transactions	4				
Insurance	9				
Insurance agencies and insurance services					
Real estate transactions	5	2			
Real estate rental and management	1				
Leasing of goods	160				
Inns and other lodgings	1				
Household services					



Type of industry	Total No.	Type of technology introduction			
		Patent + know-how	Patent + trade-mark	Trade-mark + know-how	Patent + trade-mark + know-how
Cleaning, hairdressing, and washing	1				
Other services for individuals					
Movies	3			3	
Entertainment (excluding movies)	4				
Parking lots					
Automotive repair	2	1			
Other repairs	1	1			
Cooperatives (not categorized elsewhere)					
Information services, surveys, advertising	159	3		5	
Other business services	2				1
Specialized services (not categorized elsewhere)	59	2		3	5
Medicine					
Health insurance					
Waste management	1				
Religion					
Education	3				
Social insurance, social welfare					
Academic research institutes	15				
Political, economic, and cultural organizations	1				
Other services					
Foreign public service					
National public service	1				
Local public service					
Unclassifiable industries	1	1			
Total	3175	485	6	73	73

## Reference Materials

### Overview of Number of Technology Introductions by Name of Technology

This overview of number of technology introductions by name of technology gives the overview by type (and does not include cases of trademark-only)

Technology type	Content of technology	No. of contracts
02 Agriculture, forestry, and fishing		6
	Technology related to the poultry raising and its management	2
	Nature restoration of protective banks using plant mats, plant bundles and plant pots	2
	Technology related to plant cultivation by hydroponics	1
	Technology for producing frozen cow egg fertilization	
04 Construction		26
	Technology and trademark for repair work on ducts using the in situ form method	11
	Vacuum drainage system	3
	Technology for the design and production of facilities for inhabitants' effluents	1
	Technology and trademark for management of work for improvement of houses and buildings	1
	Technology for the design and execution non-residential low-rise steel frame buildings	1
	Method for design and execution using the method of supporting walls using synthetic fabrics (websol supporting wall method)	1
	Technology for construction of the next generation of intelligent buildings	1
	Slip-form apparatus system appropriate for large diameter structures with gradient change	1
	Technology for the total or partial repair of ducts	1
	Technology for basic overall planning and for hotel design	1
	Anchoring method using maintained pressure	1
	Method using the freezing of liquids for forming freeze prang plumbing for running water	1
	Consulting on technology related to the construction of facilities for the management of radiant waste	1
	Technology for anchor fastened inside soil and rock	1
05 Manufacturing		
11 Food and tobacco		35
	Technology and trademark for the manufacturing of cooling drinks and their undiluted solution and syrup	2
	Technology for food sterilization processing (microwave sterilization) and know-how for its operation	2
	Business-use pre-mix [purenikusu] manufacturing technology	1
	Technology for preserving food freshness	1
	Technology for manufacturing dried instant rice	1

Technology for the management of processing edible seeds and for manufacturing of dried meat food products	1
Technology and trademark for the manufacturing of raw dough pizza	1
Technology for manufacturing canned drinks	1
Technology and trademark for the manufacturing of cooling drinks and their undiluted solution and syrup	1
Technology for the manufacturing of cooling drinks with beta carotene and their undiluted solution and syrup	1
Infant-use powdered milk and oral contraceptive, non-steroid anti-phlogistic [phonetic] pain-killer	1
Technology for manufacturing inosinic acid (raw material of flavoring) using fermentation	1
Technology for manufacturing various soups put in containers and for manufacturing their undiluted solution	1
Technology for manufacturing new potato-based products	1
Technology for manufacturing snack foods expanded by frying	1
Technology for manufacturing tea drinks and their syrup and instant tea	1
12 Textiles (Omitted)	30
13 Clothing and textile products (Omitted)	165
16 Wood materials, wood products, furniture, etc. (Omitted)	10
17 Pulp, paper products and printing (Omitted)	11
20 Chemical products	
21 Inorganic chemicals	7
Technology for managing gases containing sulfur dioxide and for manufacturing sulfuric acid	1
Cyclohexanol dehydrogenation catalyst for use in manufacturing cyclohexanon	1
III catalyst for use in manufacturing ascetic acid vinyl monomer	1
Technology for the manufacturing and sale of zirconium compounds	1
Method for controlling density of copper ions and salt-formed ions used in the manufacturing of oxidized copper	1
Technology for film-formed aluminum flake for use in cosmetics containing aqueous metallic paint	1
Partial process for manufacturing of ammonia by gasifying coal	1
22 Organic chemicals	44
Technology for the manufacturing of polypropylene	2
Textile-strengthening, heat-hardened resin for correction of deformities	1
Technology for manufacturing compounds (unformed materials)	1
Materials formed by light hardening for use in dry film resist	1
Technology for manufacturing polymer-dispersed liquid crystals	1
Technology for manufacturing macromolecular solid electrolytes	1
Technology for manufacturing a toughened polyamid blend	1

Monoazo dye for use in dyeing drainage textiles with waterless dispersed dye	1
Technology for manufacturing diphenyl carbonate (DPC) without using phosgene	1
Technology for manufacturing fragrant hydrocarbon products and for basic design of manufacturing facilities	1
Technical information on the manufacturing, processing, and applications of polybuthylene	1
Technology for the extraction and separation of benzene	1
Technology for the manufacturing of organic t-butyl hydro peroxide	1
Technology concerning the manufacturing etc of heat-resistant plastic	1
Technology for the manufacturing and application processing of organic silicon compounds (silicon resins in general)	1
Technology related to the manufacturing of amino acids (especially L-lysine)	1
Technology for using alcohol as a fuel for internal combustion	1
Manufacturing technology and trademark for hardened plastics	1
Technology for analyzing the molecular design, synthesis, liquid crystal nature and molecular structure of liquid crystal materials	1
Manufacturing and applications of cellulose ethyl with drainage regeneration	1
Organic flame-retardant containing 1,2 bisethane (pentabromophenokine)	1
Technology for manufacturing azines 1	1
Technology for manufacturing methyl tertiary buthyl ethyl (MBTE)	1
Know-how for the use of preventive to non-delivery preventive on overlapping walls made of vinyl chloride resin	1
Technology for manufacturing methyl tertiary buthyl ethyl (MBTE)	1
Technology for manufacturing organic fluorine compounds	1
Technology for manufacturing divided-branch alcohols	1
Technology and trademark for manufacturing polyvinyl formal resin	1
Technology for manufacturing lactic acid using fermentation	1
Technology for manufacturing polylactic acid	1
Technology for manufacturing the raw material monomer (bisumaramide of polyamide resin)	1
Technology for manufacturing water-soluble conductive macromolecules	1
Technology for manufacturing phenol and acetone as raw materials for cumen	1
Technology for manufacturing alkyl phenol	1
Technology for distribution management and manufacturing of liquid crystal mixtures, a material for ferroelectric crystal	1
Technology for the manufacturing of styrene monomer	1
Technology related to the manufacturing of ethyl benzene	1
Technology for the manufacturing of styrene	1
Technology for the manufacturing and processing of special heat-resistant phenol resins	1
Technology for the manufacturing of polystyrene resins with high impact strength	1



23 Synthetic textiles	2
Acetate bundling guiding technology for tobacco filter use	1
Patent related to multifilament polyester thread	1
24 Fat processing, soap etc	16
Charge prevention coating technology for manufacturing of thin film	1
Methods for manufacturing, coating, and managing of paint which won't produce wastes during the coating process	1
Technology for producing fatty acids and glycerine from the hydrolysis of natural fats	1
Technology for manufacturing in-mold paints	1
Technology for the distribution, manufacturing, and use of automotive paints containing resin chemicals in paint	1
Technology for the formation and manufacturing of fluorine resin paints for use in pre-coating metal and in buildings	1
Manufacturing technology and trademark for paints	1
Special catalysts for urethan paints and paints including them	1
Micro-surfactant agent and the technology for manufacturing it	1
Manufacturing technology and trademark for household-use cleaners	1
25 Pharmaceuticals	102
Cure for peptic ulcer	2
Radioactive drug (technetium chirate type) for treatment of kidney function	2
Drug for use in deep true bacterial illness and cutaneous true bacterial illness	1
Dementia resistant drug, with nimodipine as main ingredient, for use in repairing cognitive damage	1
Pressure reducing remedy with angiotensine altered enzyme preventative	1
Technology for manufacturing sulphonic acid ester (intermediate state in manufacturing blood pressure reducer	1
Technology for manufacturing new ethylamine inducer and pharmaceutical materials using it	1
Technology for genes related to plant photosynthesis and for the acceleration of photosynthesis of plants	1
Molecular biology technology related to plant photosynthesis	1
Reagent (El-Buffer) for diagnosis of hepatitis virus and AIDS virus	1
Monoclonal antibodies related to the treatment of B cell-type lymph swelling and autoimmune disease	1
Technology for manufacturing animal drugs (growth hormone secretion accelerator peptide)	1
Technology for dementia-resisting drugs	1
Technology and patent related to ANF (atrial sodium urination factor)	1
Technology for manufacturing animal-use multiple vaccine using gene rearrangement technology	1
Technology for manufacturing a pharmaceutical ingredient (L-tryonene)	1



Hybridmer for production of monoclonal antibodies used as diagnostic drug for ovarian cancer	1
Technology related to drug for resisting diabetes	1
Technology related to hexamethyl melamine, a cancer-controlling drug	1
Drug for central muscle relaxant drug (cyclobenzaprine hydrochloric acid salt)	1
Enzyme injection treatment for intervertebral hernia (used for development of chondrocinase drug)	1
Technology for manufacturing of test kit for skin cell culture inside human large artery and above human mammary glands	1
Technology for the culture and division of cerebral cortex nerve cells	1
Technology for developing protein antibodies using genetics	1
Technology for insertion of plasmide or vector foreign genes and method for manufacturing protein	1
Technology related to blood sugar management and diagnostic drug	1
Shadowing drug for use in diagnosis using X-rays, ultrasound, and MRI	1
Drug for relieving frequent urination and incontinence	1
Drug for eradication of parasitic insects in animal feed (semduramycin)	1
Technology related to the improved preservation and temperature stabilization of cell culture areas	1
Technology for the growth and alignment of cross tridium bacteria for use in managing pulp wastes	1
Mental disease resisting drug effective for both positive and negative symptoms	1
Manufacturing technology and trademark for fat-lowering drug	1
Patent related to cell culture micro-carrier and to its cultivation method	1
Technology related to oral shadowing medication for OMP:MRI (magnetic resonance imaging) diagnosis	1
Technology for the manufacturing of medicine and farm animal medicines	1
Opening of test data on pharmaceuticals (medicine for circulatory organs)	1
Technology for the manufacturing of drugs for improving new brain circulation	1
Biotechnology for use in development of pharmaceuticals and diagnostic methods for humans	1
Technology related to manufacturing of pharmaceuticals (improving function of digestive tract)	1
Anti-folic acid drug (anti-tumor drug)	1
Technology for manufacturing drug effective against tracheal asthma, allergic nasal inflammation, etc.	1
Immunological examination technology used in developing diagnostic drugs	1
Gene revealing system for use in manufacturing protein	1
Technology for manufacturing radioactive drugs, etc.	1
Technology for manufacturing drug used as the base for drug effective against high fat blood disease	1

Technology for genetically changing protein (technology related to interleukin	1
Manufacturing technology and trademark for sleep inducing drug	1
Technology for diagnosing large intestine cancer by examination of rectal mucus	1
Method for making pigment compound as an additive to feed of farmed fish	1
Technology for manufacturing vitamin B for use as ingredient of pharmaceuticals	1
Technology for manufacturing L-serine for use as ingredient of pharmaceuticals	1
Remedy for cure of digestive ulcer	1
Technology for the manufacturing of investigative drugs using auto-immune measurement method	1
Technology for manufacturing drug for dilating tracheal passage	1
Know-how regarding the diagnosis of Duchamps muscular dystrophy	1
Method for manufacturing chemical substance (intermediate stage of drug)	1
Technology relating to drug for	
Technology related to anti-dementia drug	1
Technology for drug (against malignant tumor) manufacturing	1
Anti-bacterial cure method for herpes virus	1
Technology for manufacturing lipoprotein a, a measurement and diagnostic drug for hardening of the arteries	1
Drug for uterine membrane disease and technology for drug manufacture	1
Technology for manufacturing vomit-controlling drug	1
Technology for plant cell culture	1
Drug for preventing and controlling irreversible acidosis	1
Technology for manufacturing animal-use drug (anti-bacterial drug)	1
Chemical luminosity method drug for diagnosis of immunity	1
Engineering technology for validation of manufacturing of pharmaceuticals and anti-bacterials	1
Technology for chemical luminescence measurement of immunity	1
Technology for manufacturing resistant drugs	1
Manufacturing technology and trademark for vacuum gelatin capsule	1
Technology relating to new substances (bacterial shares) for suppressing immunity	1
Technology related to a simple purification method for genes (DNA)	1
External diagnostic drug using 45J antibody for quantitative analysis of quantity of fibrinogen in blood	1
Technology, including patent, for steroid compound anti-inflammatory	1
Manufacturing etc of luminescent diagnostic drug	1
Newcastle disease resistant gene used in creation of recombinant vaccine for chickens	1
Measurement technology for clinical investigation drug	1
Manufacturing technology and trademark for pressure-lowering diuretic	1

Manufacturing technology and academic information on drug with gradual release of morphine	1
Know-how for drug replenishment and know-how for soluble pharmaceutical capsule	1
Method for inserting genes into chromosomes of twin leafy plants	1
Know-how for diagnosis of Duchamps muscular dystrophy	1
Technology for manufacturing drug (circulatory system drug) with gradual release and maintainability	1
Fermentation technology using recombinant genes	1
Technology for human monoclonal antibody (CD33 antibody and related compounds	1
Manufacturing of branch-separated macromolecule and gradual release system into body for pharmaceuticals made with that substance	1
Incontinence monitoring method using polymerase chain reaction (PCR)	1
Protein component applying biotechnology	1
<b>26 Other chemical products</b>	<b>30</b>
Silica gel-type replenishing drug for affinity chromatography	1
Technology for bacteria killer for use in agriculture and gardening	1
Technology related to the steady distribution of a vitamin A drug effective in skin invigoration	1
Manufacturing technology and trademark for depilatory	1
Manufacturing and application technology for liquid stabilizer of polymers, especially vinyl chloride resins	1
Technology related to the fermentation detection of nucleic acid used for manufacturing of research-use reagents	1
Technology for manufacturing hollow mini-spheres for decreasing the weight of plastic, paint, and cement products	1
Patent and trademark related to cosmetics etc	1
Technology related to concentrator for [?]-use	1
Manufacturing and processing technology for positive light-sensitive resin	1
Technology for managing the creation of disordered ion compound from the surface of water absorbent component	1
Technology for the manufacturing of natural cosmetics using natural ingredients	1
Manufacturing, sales, and trademark for adhesive a-1 construction apparatus and packaging system	1
Microorganism using type of dry grass bacteria	1
Manufacturing technology and trademark for scents and other additives to products such as foods and cosmetics	1
Manufacturing technology for drug used in pulp and paper industry	1
Method for manufacturing toner for use in electronic photographic imagers using the overlap method	1
Technology for the manufacture, quality control, processing, and management of resist used for photo mask manufacturing	1
Manufacturing technology and trademark for sunburn cosmetics, suncare products, drugs, and pharmaceutical external products	1

Technology related to the manufacturing, use, and sales of transparent waterproofing agents and separating agents	1
Technology for the manufacturing of photosensitive materials	1
Manufacturing technology for apparatus used for scent release, killing bacteria, and purification and for its agents	1
Technology related to manufacturing insoluble sulfur	1
<b>30 Oil and coal products</b>	<b>13</b>
Technology for managing gasoline alkali	1
Technology related to gasoline contact change process	1
Technology for managing gasoline and LNG alkali	1
Heavy oil heat cracking method	1
Technology related to the hydride removal sulfur method for reduced pressure leftover oil	1
Technology related to manufacturing of methyl tertiary butyl ethyl	1
Manufacturing know-how for pavement-use polymer changed asphalt	1
Refining technology for hexane fraction's hydrogen additive	1
Technology related to the manufacturing of rapidly hardening latex	1
Technology for manufacturing and execution of oil-resistant asphalt latex for roads and pavements	1
<b>31 Rubber products</b> (Omitted)	<b>3</b>
<b>32 Tanned leather, tanned leather goods and fur</b> (Omitted)	<b>44</b>
<b>33 Ceramics</b>	<b>31</b>
Technology related to the special shape of fire-resistant materials used in ladle rubbing movement opening and closing apparatus used for continuous casting of steel	1
Improved technology for the manufacturing of quartz glass crucibles	1
Technology related to direct joining of metals to glass	1
Design technology for gypsum hardboard	1
Technology for manufacturing ultra high-strength concrete	1
Technology for manufacturing concrete barriers (median strips for high-speed highways)	1
Technology for installing building-use glass	1
Manufacturing and use know-how for glass coatings	1
Manufacturing technology and trademark for carbon textiles using acrylic textiles as a component	1
Manufacturing technology etc for silicon sapphire, diaphragm	1
Discoveries for improvement, design, and technology related to baking of gypsum using conical kettle	1
Technology for manufacturing fire-resistant object (nozzle) for use in strip casting of steel	1
Entrusting of research related to processing technology for high purity ceramics	1
Resin coating technology for strengthening glass bottles	1
Dry process block installation system for glass block wall construction	1



Technology for making hot wires used for defogging automotive rear windows into radio wave receiving antennas	1
Electrochemical regeneration technology for weakened concrete	1
Manufacturing technology and patent for ceramic roll used in corona discharge management machine	1
Manufacturing technology for carbon textiles	1
Technology related to optical fiber, optical fiber cable, and optical glass	1
Technology related to the manufacturing etc of ceramics used in silicon nitride baked bodies and structures	1
Manufacturing technology for home-use enameled products	1
Cast-iron enameled bathtub	1
Patent related to optical fibers	1
<b>34 Steel</b>	<b>6</b>
Manufacturing technology for electro-plated tin	1
Manufacturing technology for metal foam	1
Manufacturing and coating of mother material for ultra-hard metal	1
Technology and trademark related to coating surfaces within steel pipes	1
Manufacturing technology for aluminum-zinc alloy plated steel sheets	1
Technology related to vacuum arc deskerling	1
<b>35 Nonferrous metals</b>	<b>14</b>
Manufacturing technology for cutting tool materials	1
Manufacturing technology for metal powder	1
Manufacturing technology for solder paste	1
Aluminum technology for electrolysis using process for low-temperature extracting from bauxite	1
Manufacturing technology for tri-ethyl aluminum (TEAL)	1
Design and manufacturing technology for nuclear fuels used in boiling water reactor (BWR)	1
Manufacturing technology for CATV cable	1
Technology for coagulating and forging aluminum alloy bilette	1
Refining technology for oxide refining by recovering ore by removing impurities from lead containing gold and silver	1
Method for managing the level of melted metal in continuous casting of aluminum	1
Technology related to manufacturing of magnesium die-cast products	1
Technology related to nuclear power plant fuel	1
<b>36 Metal products</b>	<b>39</b>
Technology for extraction of metallic powder	1
Technology related to structure of pipe coupling of oil well pipes	1
Technology relating to gilled metal pipe used in heat exchangers	1
Manufacturing technology for spray nozzle	1
Rope stopper used when hardening rope ends	1
Metal surface management technology based on gas explosion liquefaction method and plasma liquefaction method	1



Steel access floor panel for two level floor use	1
Manufacturing technology for manually operated cutting pliers	1
Technology for oxide film covering and heat management film formation for hardened alloys used in cutting tools	1
Folding construction—use steel scaffolding	1
Technology for forming birette by atomizing and coagulating melted metal	1
Manufacturing technology for endmill used for overlapping cutting	1
"Rootsuke" (?) method for aluminum with insufficient removal of flux residue	1
Oxygen blowing lance nozzle for refining melted steel	1
Containing processing covering film for wear-resistance and ornamentation of high-speed tools, metal patterns, etc.	1
Press technology related to manufacturing thin sheets (shims) for adjustment of machine parts	1
Pipe coupling used to join polyethylene piping and steel piping used for gas	1
Microwave melting technology for aluminum nitride	1
Nonelectrolytic dissolution technology for nickel plating	1
Nonelectrolytic nickel technology for aluminum magnetic disks and technology for general non-electrolytic nickel	1
Manufacturing technology for materials used in energy-saving method for temporary materials and forms used in construction	1
Manufacturing technology and trademark for composite pipe made from metal and resin	1
Finishing screw product for use in part of airplane body structure	1
Technology related to screw binding method	1
Design and manufacturing technology for transmission of bridge support structural impact	1
Manufacturing technology for metal rings used in airplane engines	1
Electrolytic abrasion technology for apparatus, piping etc made from materials such as stainless steel, other metals, and metal alloys	1
Low-temperature arc evaporation technology	1
Manufacturing technology using metal injection molding	1
Know-how for design, manufacturing, and installation of unitized curtain wall system	1
Method for repairing gas turbine heads using "rosetsu" method	1
Aerosol dispensers with pressure added mechanically	1
Transfer of utility model (under consideration) for women's water razor	1
Manufacturing technology for metal filter	1
 40 Machinery and apparatus for general industrial use	
 41 Boilers and motors	71
Introduction of research results related to development of improvements for improved boiling water reactor	6
Technology related to aiding underwater welding in boiling water reactors	6

Technology related to a method of appraising the sturdiness of structures inside the reactor of a boiling water reactor	6
System technology for sodium-cooled high-speed breeder reactor nuclear power plant	2
Technology related to boiling water reactor power plant	2
Introduction of technical information related to boiling water reactor	2
Obtaining results of technical study by BWR owners group	2
Nuclear power steam supply system for pressurized water nuclear power plant	2
Manufacturing technology related to turbine generator (fire- or nuclear-powered)	1
Technology related to turbine rotor material	1
Technology related to lowering diesel engine exhaust gas emissions	1
Research related to conduct of first-group organic impurities of BWR nuclear power plants	1
Technology related to evaluation of the realizability of simplified PWR	1
Technology related to the detailed design of simplified light water reactors	1
Technology for analyzing the conduct of combustion gases in a coal-fueled boiler	1
Research and tests on combustion behavior during high temperature of hydrogen emissions from a nuclear reactor during an accident	1
Research and tests on structural behavior when pressure is above that designed for nuclear reactor housing vessels during model use	1
Design information and patent related to fuel exchange aggregate for BWR	1
Manufacturing technology for land-use gas turbine and attached apparatus	1
Results of research related to FBR design, operation, and maintenance function demands	1
Manufacturing technology for land-use gas turbine and attached apparatus	1
Research on simplified BWR technology (research on gravity descent-type ECCS)	1
Acquisition of research on making more compact the core of a high-speed breeder reactor	1
Acquisition of analysis of buckling of high-speed breeder reactor's partition structure	1
Manufacturing technology for on-land 4-cycle diesel engine	1
Technology for safety evaluation of nuclear power plant	1
Acquisition of research on positive reactor preventative conceptual design (tests and research on system for removing destructive heat from natural reclamation)	1
Acquisition of research regarding policy for investigating during high-speed reactor's supply period	1
Technology for investigating cooling of debris after damaging accident related to FBR positive reactor design	1

Results of R&D on handling of measurement apparatus for use inside BWR reactor	1
Acquisition of experimental version and tests of gamma thermo inspection apparatus for core measurements inside reactor of nuclear reactor	1
Research related to simplified PWR (Phase II) nuclear power plant	1
Technology related to repair of gas turbine high-temperature parts	1
Technical information for use in structure of cogeneration facilities using gas turbines	1
Manufacturing technology for diesel engine parts	1
Technology related to assuring safety when boiling water reactor is stopped	1
Technology related to analysis of nuclear power plant accidents	1
Research on chemical substance leakage and fuel decay in reactor water of BWR reactor	1
Introduction of technology related to pressurized water nuclear power plants	1
Research and technology related to achieving longer life for pressurized water nuclear power plants	1
Cooperative development of nuclear power plant (research on advanced technology for next generation PWR)	1
Research related to distinctive characteristics of structural materials used in reactor in a BWR environment	1
Technology for evaluating sturdiness of vaporizer's heat conducting pipe in pressurized water reactor power plant	1
Technology related to modular high-temperature gas reactor	1
Technology related to distinctive characteristics of structural materials used in reactor in light water reactor environment	1
Technical information on inspection method for fuel in damaged high-speed reactor in operation	1
Technical information related to design rationalization of light water nuclear reactor pipes	1
Technology for vibration evaluation of structures inside the reactor of a high-speed breeder reactor	1
Research results related to nuclear power generation facilities of KWU-type pressurized water reactor for Japan	1
Future technology for future large-scale natural environment and steam-cooling reactor for BWR nuclear reactor	1
Technical information on the behavior of radioactive materials in BWR nuclear reactor	1
42 Machinery for use in agriculture, construction, and mining	6
Manufacturing technology for baler of grass etc	1
Manufacturing technology for concrete-blown manipulator	1
Concrete cutting method and related machinery for diamond wire saw	1
Manufacturing technology and trademark for digger-loader for mining use	1
Manufacturing technology for swinging valve-type stationary pump	1
Manufacturing technology for revolver inside coal pulverizer (mill)	1

<b>43 Metal processing machinery</b>	<b>25</b>
Apparatus for carrying in and carrying out sheet metal materials related to sheet metal processing machinery	2
Cutting tool using cubic crystal diamond baked substance	1
Manufacturing technology for apparatus to accumulate screws made from metal band sheet	1
Patent related to tool for pulling out machinery parts	1
Ejection formation technology for half-hardened magnesium alloy	1
Manufacturing technology for NC press brake	1
Technology related to power screwdriver apparatus	1
Patent related to manufacturing and sale of portable electric screwdriver	1
Manufacturing technology for sheet bending machine that can change shapes	1
Manufacturing technology for sheet metal folding and bending machine	1
Technology for design and manufacturing of running apparatus used in sheet metal bending machine	1
Manufacturing technology for TiC/TiN multi-coated super-hard coating tool	1
Manufacturing technology for semiconductor lead frame outer covering pewter-plate	1
Manufacturing technology for crescent hacksawing machine	1
Quick-change system for connector between machine tools and tool holders	1
Technology related to maintenance of edged tools	1
Technology related to basic formation of FMS	1
Technology related to manufacturing of film coating processing apparatus for metals, alloys, etc.	1
Technology related to rod mill facilities for manufacturing of steel wire and to rod mill's attached facilities	1
Patent related to NC machine tools	1
Manufacturing technology and trademark for flat dice-type high-speed screw rolling machine	1
Technology related to manufacturing and assembly methods for tool assembly parts	1
System to focusedly standardize the selection and establishment of tool holders for use in various lathes	1
<b>44 Textile machinery</b>	<b>8</b>
Manufacturing technology for pressure constriction machine used for knit textiles	1
Manufacturing technology for apparatus managing liquid ammonia for textiles	1
Manufacturing technology for pressure constriction machine used for textiles such as cotton, flax, and ramie and for machine parts	1
Manufacturing technology for cylinder-type napping machine	1
Manufacturing technology for parts of thread-twisting machine apparatus	1
Technology related to the manufacturing of carpet manufacturing device	1



Technology for managing fluff in spun thread	1
Automatic continuous alkali pouring method which takes into account characteristics of specific dyes	1
45 Machinery for use in special industries	41
Technology related to computer control of ejection forming machine and ejection forming method	
Patent related to injection molding machine	1
Technology related to injection molding machine and injection molding method	1
Manufacturing technology for refined sugar extraction tower	1
Manufacturing technology for tearing off end of paper tube	1
Technology for design and manufacturing of "choki" trees apparatus	1
Design and manufacturing of pulp treater and paper materials mixer	1
Machine for copper leaf surface treatment carried out electrically and chemically for surface treatment of printed wiring board	1
Design and manufacturing of conveyer-use apparatus for preventing particle contamination for semiconductors	1
Insertion and extraction apparatus for injection molding machine	1
Manufacturing technology for forming bread and cake ingredients at their place of origin	1
Manufacturing technology for laser engraving ink measurement ceramic roll used in printing	1
Manufacturing technology for die bonder used for semiconductors	1
Patent related to plastic injection molding machine	1
Manufacturing technology for semiconductor manufacturing apparatus such as semiconductor board cleaner and fluid supply system	1
Grain pulverizer to reduce quality decline due to heat	1
Technology and trademark for dampness supply apparatus for offset printer	1
Agent recycling apparatus for kraft paper manufacturing process	1
Manufacturing technology for pre-former for rubber manufacturing	1
Manufacturing technology for linear motor-driven semiconductor assembly apparatus	
Manufacturing technology for pin-type squeezer	1
Instant print board manufacturing device using conductive polymer	1
Insertion and removal apparatus and injection form metal patterns for injection molding machine	1
Magnet confinement-type plasma oscillator for semiconductor manufacturing	1
Technology related to electron beam position etching apparatus	1
Manufacturing technology for injection flood washing apparatus for washing automotive parts	1
Manufacturing technology for empty can recovery machinery and parts, game software	1
Manufacturing technology for plasma etching apparatus for use in semiconductor manufacturing	1



Manufacturing technology for continuous machine facilities for amassing and discharging paper-cuttings	1
Technology for treatment of cast metal solvents	1
Oscillating manufacturing apparatus for concrete secondary products	1
Manufacturing technology and trademark for bread baker	1
Manufacturing technology for liquid steel vacuum gas remover	1
Painting wooden materials using low pressure method	1
Manufacturing technology for apparatus to solder print boards	1
Technology related to the manufacturing and use of flat-die type pellet manufacturing apparatus	1
<b>46 Machinery for general industrial use</b>	
<b>47 Pumps, compressors, blowers</b>	<b>8</b>
Design and manufacturing technology for screw compressor	1
Design and manufacturing technology for vacuum pressure-type wave-creating apparatus	1
Manufacturing technology for controllers, circuit boards, etc., for pressurizer incorporating microprocessors	1
Technology for design and manufacturing of process pump and for boiler supply pump for power plant	1
Manufacturing technology for apparatus and parts of apparatus attached to shafts of pumps, compressors, etc.	1
Manufacturing technology for scroll pressurizer	1
Manufacturing technology for supplementary facilities for refilling automobiles using natural gas	1
Manufacturing technology for variable pitch axial flow fan	1
<b>48 Power equipment</b>	<b>15</b>
Design, technology and trademark for apparatus to carry out ship freight	1
Technology related to self-centering release bearing	1
Load-handling sorting apparatus	1
Manufacturing technology for automatic storage facilities (power column)	1
Manufacturing technology and in-plant car operation system for inductive wireless-type self-moving car	1
Manufacturing technology for pallet-moving system inside air-type warehouse	1
Design and manufacturing technology for helical vehicle	1
Technology related to the design and manufacturing of load- handling apparatus such as hatch cover for freighter-use	1
Manufacturing technology for elevated work vehicle	1
Technology related to conveyor belt	1
Technical information for surface treatment of solid lubricant for bearings	1
TD controller for use with high rigidity magnetic bearings	1
Design and manufacturing technology for torque converter and helical cone vehicle apparatus	1
Technology (software) for manufacturing and use of high density air-powered moving apparatus	1

49 Chemical machinery and apparatus	60
Ethylene process for naptha cracking to manufacture ethylene	1
Dioxene heat dissolution process for flying sparks from city garbage incineration plants	1
Catalyst recovery technology	1
Olefein/paraffin transformation process	1
Manufacturing technology and trademark for screw roll type crusher	1
Manufacturing technology for electric furnace dust treatment facilities (recovery of zinc, etc.)	1
Technology related to process for poured grains of urea	1
Manufacturing technology for apparatus to recover and purify high purity undiluted sulfuric acid used in semiconductor manufacturing process	1
Manufacturing technology for lower part water collection apparatus for water treatment	1
Technology related to process for recovering carbonic gas from exhaust gases	1
Technology related to centrifugal clarifier for reprocessing plants (nuclear technology)	1
Technology related to manufacturing of urethane materials	1
Pollutant removal system for gases including organic solvents using zeolite	1
Manufacturing technology for water collected and delivered from lower part of water treatment filterer	1
Technology for removing gas from exhaust gases created with reclamation of catalysts from circulating catalyst dissociation apparatus	1
Technology for manufacturing, installation, and operation of liquid forced steam system	1
Process for water-added purification of C5 fraction by-product by ethylene plant	1
Technology for absorbing and removing CO2 from boiler exhaust gases	1
Manufacturing technology for all heat exchangers	1
Design information for uranium and plutonium dust storage facilities for used fuel treatment plants	1
Air filter for non-separator structure	1
Technology related to apparatus for manufacturing MTBE	1
Technology related to the removal of hydrogen sulfide and hydrogen polysulfide from liquid sulfur	1
Method for removing smell from exhaust gases (dirt) due to addition of sodium chlorite	1
Technology related to system for treatment of low to mid-level radioactive wastes	1
Manufacturing technology for small manufacturing plant for soda	1
Selective liquid hydrogen-adding process for diene and acetylene found in propane fractions	1
Manufacturing technology for cleaning jacket for spray dryer chamber	1

Multilayer container and high-pressure heat exchanger with screw-type special lid attached	1
Manufacturing technology for treatment of heat dissociation-molten waste	1
Facilities for treatment of repugnant exhaust gases	1
Rubber tube film-type aerator apparatus	1
Technology for disposal of high-level wastes (long half-life to short half-life)	1
Waste water treatment process making plastic sponges into micro-absorbent carriers	1
Manufacturing technology for inner and Uranus reactors for reprocessing of agents used in reprocessing plants	1
Technology related to heat exchange process	1
Manufacturing technology and trademark for various air filters and air sentinels	1
Technical information related to MERC, etc. in reprocessing plants for used nuclear fuels	1
Method for extraction of uranium and plutonium from used fuels through use of electrolytic refining	1
Technology related to the treatment of carbon 14 in reprocessing facilities	1
Technology related to the creation and design of reduced pressure steam process for used fuel reprocessing plant	1
Technology for manufacturing ethylene oxide and ethylene glycol	1
Manufacturing technology for special crusher	1
Split refining of gas using split membrane	1
Information related to electrical trash collecting apparatus for reprocessing facilities	1
Sulfur reclamation technology	1
Low-temperature separation technology for dioxin in flying sparks from waste incineration	1
Technology related to recycling of actinide element from light-water reactor fuel	1
Dry-type sulfur and saltpeter eliminating apparatus, manufacturing technology for dry-type toxin-eliminating apparatus and low-temperature catalyst saltpeter eliminating apparatus	1
Method for reduced-pressure balance heating in reduced-pressure balance friction generating apparatus	1
Dust chute technology for separated collection	1
NRTA (near real time measurement treatment) system for reprocessing of used fuel	1
Technology for eliminating acid gases and particles from exhaust gases	1
Manufacturing technology for liquid mixtures used in manufacturing of oil-water separating agents	1
Technology related to manufacturing of side-type 2-axle shearing crusher for rubbish treatment	1
Manufacturing technology for reprocessor for used fuel reprocessing plant	1
Method for evaluating reliability of nuclear fuel cycle facilities	1

50 Other machinery for general industrial use	8
Manufacturing technology for circular top-charge melting furnace	1
Technology related to oil pressure pump and motor	1
Manufacturing technology and reclamation system for oil pressure-type damper for use with large plastic rubber waste container	1
Cooling apparatus for walking beam-type heating furnace	1
Technology related to air purification apparatus	1
Manufacturing technology related to scrag dart and dart machine	1
Manufacturing technology for high pressure roll mill	1
Manufacturing technology for inner circulation flowing floor incinerator for city wastes	1
51 Other machinery	39
Technology related to thread cutting apparatus for industrial-use chain sewing machine	2
Technology for direct cooling superconductive magnet without using liquid helium	2
Manufacturing technology for liquid automatic replenishing cap seal	2
Technology related to color correction for color copiers, etc.	
Technology related to industrial robot system able to assemble pliable parts	2
Manufacturing technology for color electrostatic plotter	1
Technical know-how and software related to low-noise typewriter	1
Automatic product packing system accompanying cash register	1
Manufacturing technology related to automatic packing system	1
Automatic adjustment for reading level of reading control apparatus of image formation apparatus of digital copiers, etc.	1
Manufacturing technology for Langen SL wrapper	1
Technology related to design and manufacture of industrial-use robot	1
Technology related to making high-speed two-sided copying and printing of copiers, etc. and to preventing omissions	1
Manufacturing technology and trademark for oil-gas valve (duo-check valve)	1
Technology related to factory automation apparatus	
Technical information related to new type of artificial snow maker for Japanese market	1
Manufacturing technology for system for packing pulp sheet with wire	1
Metal pattern for punching by sheet metal processing machine	1
Mechanical apparatus for completely automatic shrink wrapping of paper skids	1
Control device for apparatus related to automatic gum tape sending apparatus for sewing machine	1
Research findings and control technology for variable shaking apparatus in apparatus external to air conditioning chamber	1
Manufacturing technology for feeder which automatically supplies sheets to ironer	1
Manufacturing apparatus for wrappings used to prevent electrostatic shock	1



Calculation with clock function	1
Manufacturing technology for air filter, air cleaner and related products	1
Manufacturing technology for electronic cash register	1
Process technology for checking industrial-use sewing machines	1
Manufacturing technology related to automatic revolving door system	1
Manufacturing technology for fire extinguishing apparatus	1
Technology related to intelligent control of air conditioning system and to super-low temperature freezer	1
Continuous washing water remover, dryer and membrane water remover for use in cleaning	1
Manufacturing technology for vacuum valve	1
Manufacturing technology for parts of packing machinery used in tobacco manufacturing	1
<b>52 Transportation machinery</b>	<b>75</b>
Automotive safety belt	3
Automotive air bag apparatus	2
Automotive engine cylinder liner using powder metallurgy method	1
Patent related to throttle body used in single-spot injection apparatus for automotive engine	1
Patent related to engines and vehicular electronically controlled gasoline injection systems	1
Manufacturing technology for helicopters and their parts and components	1
Manufacturing technology for airplane freight hook	1
Technology related to aerospace system engineering	1
Air accord apparatus and carbonic gas removal apparatus for manned space station	1
Manufacturing technology for airplane flux valve compensator	
Pintail injector for electronically controlled gasoline injection system	1
Control system, etc., for oil pressure assisted turbocharging system for use in internal combustion engine	1
Manufacturing technology for railroad brake machinery	1
Manufacturing related to automotive disk brake pads	1
Automotive brake system and parts	1
Manufacturing technology for airplane window materials	1
Assembly technology for airplane loader	1
Manufacturing technology for seat reclining apparatus	1
Patent for space station and its construction	1
Manufacturing technology for railroad brake machinery	1
Pillar lock mechanism for wing body and its assembly and manufacturing technology	1
Development, design, and manufacturing of body parts for private aircraft	1
Method and apparatus for housing vehicle frame attached to wheel for trailer for detaching freight containers	1
Technology related to mounting interface for airplane engine	1
Technology related to magnetic impediment in exposed portion of ship	1



Trademark and technology (CAE) for design and manufacturing of ship cargo-handling rigging product	1
Pressure-resistant air-tight chamber type of outside-opening prang door for use in next generation of Shinkansen cars	1
Manufacturing technology for ship gas turbine module	1
Technology for the manufacture and assembly of parts for ship gas generation and for its operation	1
Manufacturing technology for magnetic floating-type city traffic system	1
Repair, etc. of wet end subsystem for helicopter sonar	1
Technology related to design and manufacturing of automotive steering gear	1
Technical assistance related to maintenance and repair of airplanes	1
Manufacturing technology for electronic control apparatus for airplane engines	1
Manufacturing technology for components of airplane engine fuel control apparatus	1
Automotive manufacturing technology and patent	1
Self-regulating glow-plug (preheating plug) technology	1
Installation technology for parts to make existing vehicles into natural gas-fueled vehicles	1
Manufacturing technology for automotive sun visor mechanism	1
Airplane body manufacturing technology	1
Technology related to signal management and accident inspection for electronically controlled carburetor	1
Technology related to manufacturing and repair of loading apparatus for jets	1
Technology related to use of turbo fan engine attached to afterburner	1
Noise suppression and reclamation system and software for automotive navigation system	1
Control technology for automatic transmission	1
Air mix valve, etc., for helicopter cabin heating	1
Helicopter rotor blade heater	1
Repair technology for component parts of airplane	1
Technology related to spark system of internal combustion engine	1
Technical information related to motor boat type (delta conic hull)	1
Manufacturing technology and software for navigation system using CD	1
Technology related to wave-shooting double-hulled boat	1
Liquid analysis technology related to automotive torque converter	1
Technology related to developing capabilities of diesel engine	1
Manufacturing technology for light-weight alloy automotive engine crankshaft	1
Oil pressure damper for automobile clutch	1
Design and manufacturing technology for monorail	1
Technology related to automotive body system products	1
Manufacturing technology for servovalve	1
Manufacturing technology for noise elimination	1
Design technology for small satellite	1

Manufacturing technology for damp 2-step or multi-step mass fly hole	1
Technology and parts for use in running diesel vehicles on mix of natural gas and gasoline	1
Manufacturing technology for vehicle seats	1
Manufacturing technology and trademark for cylindrical mixed pig iron vehicle	1
Drawings and technical information related to manufacturing suspensions	1
Intake valve control mechanism for gasoline internal combustion engine	1
Boat hull manufacturing technology related to aluminum hull boats	1
Manufacturing technology for transmission apparatus	1
<b>53 Precision machinery</b>	<b>72</b>
Cartridge and image apparatus for silver salt cameras and film	1
Repair technology for helicopter fuel indicators and operating oil indicators	1
Non-contact eye pressure measurer	1
Technology related to use of special airplane data for design and manufacturing of simulator	1
Design of heat control system for experimental module attached to space station	1
Structure of electronic watch which uses sound as time signal	1
Manufacturing technology for medical solution bags and solution replenishment technology	1
Patent related to blood analysis apparatus	1
Passive autofocus technology using signal in photo-image elements	1
Patent related to measuring phospho-lipids and their antibodies	1
Magnetic directional standard apparatus for use in inertial navigation	1
Manufacturing technology for wound-protecting materials	1
Manufacturing technology for automotive tire air pressure measuring and sensing apparatus	1
Manufacturing technology for photometric systems	1
Manufacturing technology for vein valve incision tool	1
Manufacturing for high-purity fiber-optic gyro	1
Manufacturing technology for super-sensitive TOC measurement device	1
Manufacturing and measurement technology for microwave apparatus for measuring diesel particle load	1
Manufacturing technology for apparatus measuring magnetic wave interference	1
Tire testing apparatus (flat road surface apparatus for simulation)	1
Manufacturing technology for apparatus to measure length and freeness of pulp textile used in paper manufacturing	1
Technology and measurement program for application of laser optical wire to solid measurement apparatus	1
Optical encoder	1
Clinical diagnostic know-how using ophthalmological image analysis system	1
Manufacturing technology related to measurement apparatus using catalytic combustion sensor	1

Patent related to manufacturing technology for apparatus attached to medical microscope	1
Manufacturing technology for thermister temperature probe	1
Digital processor-controlled automatic blood pressure measurement apparatus	1
Manufacturing technology related to apparatus for measuring impact position	1
Manufacturing technology related to optical image-binding elements	1
Manufacturing technology related to wave-making apparatus	1
DNA probe diagnostic technology	1
Manufacturing technology related to flow measurement (digital mass flow controller)	1
Technology related to configuration of zoom lens for lens shutter camera	1
System for pouring hydrocarbon mixtures into gas chromatography analysis apparatus	1
Manufacturing technology for apparatus to automatically distributing liquid samples	1
Manufacturing technology and trademark for implanted heart pacemaker	1
Technology related to treatment method and tool for artificial tooth attachment	1
Manufacturing technology related to radioactive line wire inspection apparatus for ships	1
Manufacturing technology related to inertial sensor, inertial navigation apparatus, etc.	1
Manufacturing technology related to sensor system for measuring pressure distribution	1
Manufacturing technology related to gas-permeable hard contact lenses	1
Manufacturing technology for 3-dimensional lay-out measurer (lay-out machine)	1
Manufacturing technology for "kentai" automatic insertion apparatus and software for automatically judging "kentai" data	1
Monitoring system for satellite communications circuits	1
Control circuits for use in automatic focus detection apparatus and photo apparatus	1
Manufacturing technology for capillary electric swimming apparatus	1

## 60 Electrical machinery and apparatus

61 Electrical machinery for generation, transmission and distribution of electricity and for industrial use	24
Design and manufacturing technology for apparatus (flow stopper) for substation	1
Manufacturing technology for high-output light-weight AC motor	1
Manufacturing technology for fuel cell and related patent	1
Manufacturing technology and trademark for electrostatic painter	1
Design and operating technology for electric furnace for steel scrap melting refining	1

Technology for transformer and electric and magnetic heads for OA equipment and video machines	1
Electromechanical switching apparatus (plungerless solenoid)	1
Manufacturing technology for glow plug	1
Manufacturing technology for motor used in determining position of magnetic heads, etc.	1
Technology related to amateur winding of small DC motor	1
Linear motor technology for use in board lead-through inspection tool (in-circuit tester)	1
Design and manufacturing technology for DC electric furnace	1
Design technology for zero voltage, zero current power apparatus	1
Manufacturing technology for 5-phase stepping motor	1
Configuration technology for small 2-phase brushless motor	1
Design and manufacturing technology for high temperature, vacuum atmosphere furnace	1
Technology related to non-contact power supply	1
Manufacturing technology for spray-cooled ceilings, side walls and elbows of electric furnace	1
Manufacturing technology for electrostatic driven relays	1
Manufacturing, development, and sales of electrostatic oiler	1
Manufacturing technology and trademark for vacuum furnaces and special furnaces	1
Design and manufacturing technology for substance changer for power generating equipment using phosphoric acid fuel cells	1
Development, design, and manufacturing technology related to condensers for over 3KVAR of electric power	1
Manufacturing technology for electrostatic powder painting booth	1
<b>62 Electrical machinery, light bulbs, and lighting apparatus for public welfare</b>	<b>6</b>
Technology related to home electrical products	1
Technology related to heat output control and microwave leak prevention for microwave ovens	1
Technology related to product planning, development, and marketing activity for lighting	1
Technology related to cordless iron	1
Small light bulb equipped with lamp cap made of composite materials used for indicator light source	1
Manufacturing technology related to lamp using light interference filter	1
<b>63 Communications equipment</b>	
<b>64 Wire and wireless communication equipment</b>	<b>51</b>
Technology related to facsimile machine	3
Technology related to voice message collecting and sending apparatus	2
Manufacturing technology related to facsimile machine	1
Technology related to facsimile machine and electronic	1
Technology related to basic specifications for digital cordless phone and to system configuration	1
Technology for external control of on-site telephone exchange	1



Configuration method for signal noise reproduction circuit for cellular cordless phone	1
Patent related to phase make-up of facsimile modulating signal	1
Modulation method for two-sided wave zone right-angle conveyance for facsimile signal	1
Technology related to long-wave multi-diffusion type GPS receiver for use by man-made satellite	1
Technology for signal division multiple contact for use in cellular transfer communications using digital signals	1
Technology related to cordless phone system	1
Manufacturing technology related to modem	1
Technology related to facsimile reading of manuscript	1
Technology related to answering machine	1
Technology related to wireless information network	1
Manufacturing technology related to automotive telephone	1
Transmission method for use of LSI chip in facsimile modem	1
UHF directional finder for use on airplanes	1
Manufacturing technology related to aerial microwave interference apparatus	1
Technology related to data communications system for use in facsimile	1
Technology for reproducing correction signal in communications transmission apparatus (modems, etc.)	1
Technology for data compression and reproduction of compressed data in modems, etc.	1
Mode scrambler (for use with multimode optical fiber)	1
Patent related to communication modem for facsimile	1
Manufacturing technology related to automotive telephone	1
Technology related to telephone exchange service apparatus	1
Technology related to next generation communications system	1
Patent related to telephone apparatus	1
Card authentication apparatus for use with English numeral data transmission system using telephone	1
Permit for use of facsimile patent rights	1
Radiowave transmission system showing letters on FM portable radio receiver	1
Technology related to design and manufacturing of LAN products	1
Technology related to automatic voice recognition apparatus	1
Patent related to light fuser	1
Technology for management of digital wireless signal in automobiles and other moving bodies	1
Technology related to setting gray density of scanning time	1
Technology related to modem for use with G III facsimile	1
Manufacturing technology for wire and wireless communications apparatus	1
Technology related to facsimile modem	1
Patent related to telephone apparatus	1
UHF controller for use in airplane UHF signal sender/receiver	1
Frequency spreading type automotive telephone apparatus	1
Analog tel-link card circuit	1



Control from a distant location of on-site automatic telephone exchange	1
Technology related to development of data modem with fax capability	1
Manufacturing technology related to modem	1
<b>65 Radio, television, and sound apparatus</b>	<b>73</b>
Technology related to digital compact cassette	3
Manufacturing technology related to compact disk	2
Dolby stereo sound reproduction and noise reduction technology	2
Technology related to manufacturing of video and audio tapes	2
Standard specifications for digital compact cassettes	2
Dolby stereo sound reproduction technology	2
Digital compact cassette audio recording and reproduction system cassette	2
Manufacturing technology for digital compact cassette player	2
Technology related to manufacturing and attachment of electronic sound converter (flat board speaker)	1
Patent and technology for headphone with noise reduction capability	1
Manufacturing technology related to automotive FM receiver	1
Manufacturing technology and trademark for broadcast-use receiver	1
Reproduction apparatus that can read digital audio and picture information recorded on CD	1
Technology related to audio cassette tape recorder	1
Patent and technology related to system for reducing noise and vibration	1
Manufacturing technology and trademark related to automotive radio tuner	1
Television signal concealing method for safety television transmission apparatus	1
Incorporation technology for special circuits used for improving sound for tape recorders, mixers, etc.	1
CD player, CD-ROM, CD-I technology	1
Manufacturing technology for television receiver/video recorder	1
Technology related to noise reduction circuit for satellite receiver	1
Technology related to the construction of board spring, etc., for 8 mm cassette	1
Technology related to construction of board spring, locking apparatus, etc. for VHS cassette	1
Next generation television system technology	1
Receiver, monitor, and tuner for color TV incorporating CRT	1
Technology related to magnetic media (VHS videotape, micro-FDD)	1
Technology related to video and videotape	1
Manufacturing technology for audiotape	1
Manufacturing technology and trademark for Dolby noise reduction apparatus	1
Reproduction apparatus for compact disk digital audio system	1
Information receiving system for car radio and car stereo	1
Television remote control apparatus for selecting different external equipment	1

Disks for CD, CD-ROM, CD-V, and CD-I	1
CD, CD-ROM, CD-V, CD-I, and optical video discs	1
Patent related to channel selection circuit for television receiver	1
Players for CD, CD-ROM, CD-V, and CD-I	1
Technology related to circuits for enhancing sound frequency characteristics of audio equipment	1
Technology related to surround-sound apparatus of audio systems	1
Manufacturing technology and system software for compact disk systems	1
Manufacturing technology for reproduction apparatus for digital audio disk reproduction	1
Basic technology for European television format and its interface with AV	1
Optical disk player (CD, CD-I, CD-V, CD-ROM)	1
Technology related to wide-area FM receiver	1
Manufacturing technology for public-use audio equipment	1
Reproduction apparatus using compact disk and digital audio systems	1
Speakers for audio equipment reproduction of low noise area	1
Technology related to single controller for home electrical products	1
Patent related to sound surface wave apparatus	1
Audio equipment for high-fidelity reproduction of movie video software sound signals	1
Technology for overall control of electronic apparatus such as televisions and VTRs	1
Manufacturing technology related to popular-use CDs (including CD-ROM) and videodiscs (VD)	1
Technology for variable frequency FS tuner and preset channel selection for TV and VTR	1
Technology related to television receiver and VTR (amplifier circuit, channel selection circuit, etc.)	1
Technology related to television and VTR television receiver circuit (circuit apparatus for channel selection, etc.)	1
Manufacturing technology for color television and VTR picture apparatus	1
Reproduction apparatus and disk manufacturing technology for digital disk system	1
System automatically sending cassette recorder cassette to drive mechanism	1
Technology related to graphic equalizer	1
Technology related to apparatus for optical recording and reproduction on information recording medium	1
Technology related to apparatus for digital signal recording and reproduction on magnetic medium	1
Manufacturing drawing for metal shutter of digital compact cassette	1
Audio compact disk player and video tuner	1

66 Other communications equipment	1
Technology related to apparatus for preventing theft of electronic apparatus	1
67 Electronic applications apparatus	
68 Computers	1614
Software for inspection during integrated circuit pattern design	61
Game software	44
Software for computer controlled image management apparatus	41
CAD software	33
Software for NC machine tool control data preparation	32
NC data preparation software	26
Offered software for man-machine interface capability	26
CAD/CAM system software	24
Technology related to data network system software	24
General-use technical calculation software for personal computers	23
Software for assisting automatic control system design	21
Basic software for operating and using supercomputers	12
Assignment for design of corporate information software	12
Software for sending data to ethics simulation apparatus	10
Usage support and analysis software for 2- and 3-dimensional design, drawing, and machine tools	9
Host processor for NC processing machinery	8
Software for object-oriented database	8
Software for transaction management of financial futures	8
General-use structure analysis program	8
Software for logical simulations	8
Array processor software	7
Communications software for connecting personal computer with large host computer	7
Software for large system design	7
Software for design and evaluation of large circuit simulation	7
Software for implementing OS environment with UNIX	6
Software for storing computer data on disks	6
Software for making possible data exchange between differing CAD/CAM systems	6
Software for circuit board inspection	6
Software for integrated circuit analysis and inspection	6
General-use program for using combined conduct of liquids and solids	6
Simulation software for inspecting LSI logic design	5
Software for LSI design	5
Software for attaining visual data by going from personal computer to engineering workstation (EWS)	5
Software related to machine translation of Indonesian	5
Software for structure strengthening evaluation	5
Program for non-experiential molecular track calculation	5
Software for cash flow evaluation and multi-currency portfolio management	4
Software for outputting image on high-quality image printer for personal computer	4

Workstation software	4
General process simulator for use in design of processes of chemical plant	4
Image management software	4
Software for collection and analysis of experimental and theoretical data	4
Manufacturing technology for information management system	4
IC card software for electronic notebook	4
Software related to semiconductor integrated circuit logic design	4
Software for vector processor unit	3
Packaged software, etc. for letter editing	3
Software for outputting personal computer image to printer	3
Personal computer network file system software	3
Personal computer network software	3
Personal computer educational software	3
Software for data information on every Japanese character resident in printer	3
Experimental software	3
Technology for mechanical and electronic printers and typewriters and for manufacturing apparatus	3
Japanese-language software for automotive breakdown diagnostic apparatus	3
Analytic program for analysis of auto part materials at time of collision	3
Management control system for oil refining, petrochemical, steel, chemical, and other plants	3
Technology for computer control of oil refineries	3
Program for planning production of petroleum products using linear programming	3
Heat analysis software for analysis photographs of solar heat that reaches satellites	3
Software for semiconductor design	3
Software for 2-dimensional image management, physical phenomena analysis, etc.	2
Technology related to 3.5 inch disk drive apparatus	2
Technology related to 3.5 inch micro floppy disks 3-dimensional CAD training	2
Software for personal computer evaluation and ROM BIOS exchange	2
Personal computer graphic library	2
Personal computer to tandem machine data exchange communications software	2
Technology related to apparatus and system for writing and reading information to IC card	2
LAN hardware development software	2
Research and development software for expert system using SPARC	2
Maintenance for simulation descriptive language software for minicomputer	2
Software related to window, etc.	2
Software with goal of rationalizing ethylene manufacturing apparatus	2
System data management software	2
Design and development software for object-oriented database	2



Applications software for operating and using supercomputer	2
Graphics software	2
Computer network software	2
Workstation AI software for system inspection	2
Simulation system development language	2
Job management software for tandem computer	2
Source library system for tandem computer	2
Database management and application development software	2
Technology related to notebook computer	2
Software for notebook computer	2
Technology related to hard disk drives	2
Manufacturing technology for hard disk drives	2
Manufacturing technology for bar code reading apparatus	2
Software related to personal computer high resolution	2
Personal computer communications management software	2
Personal computer file transfer software	2
Program language software	2
Operating system (OS) for pen computer	2
Software for controlling computer of polyethylene manufacturing plant	2
Micro-focus COBOL/	2
Reverse engineering software	2
Data exchange software for connecting different types of computers	2
Software for machine interface of image management	2
Control software for various LANs, etc.	2
Software for financial transaction management	2
Optical disk file management software	2
Industrial robot simulation software	2
Consultant on program concept research for instructions control communication system	2
Real-time AI construction tool	2
Research and development software for real-time management expert systems	2
Software for designing integrated circuit patterns	2
Program construction software for integrated circuit analysis and inspection	2
Collision analysis program	2
Artificial intelligence technology	2
Artificial intelligence software	2
Software for recognition and management of figure and character information	2
Software for dynamic simulation of oil refining process	2
Technology for oil refining apparatus training simulator program	2
Fourth generation language and related software	2
Control technology using computer (software) for optimization of oil refining process	2
Technology related to moving media plotter attached to computer	2
English digital fonts for use in computer photosetting	2
Electronic mail software	2
Support software for design of electronic circuit boards	2
Software plumbing network heat flow calculations	2
Plumbing design software	2



Electronic design support system software	2
Simulation program	2
Basic software, micro-code, and update for non-stop computer	2
Software related to fluid analysis using finite volume method	2
Simulation software for evaluating decision support systems	1
16-bit operating system	1
Technology related to 16-bit microcomputer	1
16-bit microcomputer software (simulator debugger)	1
16-bit computer operating system (OS)	1
2.5 inch hard disk drive technology	1
Operating software for 2-dimensional graphics capability X terminal	1
Technology related to 3.5 inch hard disk drive, etc.	1
Technology related to 3.5 inch micro hard disk drive, etc.	1
Design and manufacturing technology for 3 bit micro controller	1
Floating small number "ensan" software for 3-bit microcomputer	1
Technology related to 3-bit workstation hardware	1
Logical design drawings and related software for 3-dimensional graphics capable X terminal	1
3-dimensional meso-scale atmospheric pressure disruption spread modeling software	1
3-dimensional modeling software	1
Control software for five-axle processing machines	1
Materials on BIOS for specific CPU	1
Operating system (OS) and applications programs development debugger for 8-bit microcomputer	1
Software for imitating language transformation software and machine language for 8-bit microcomputer	1
Computer board and software for ACE-based RISC type MPU	1
Obtaining of research results on new media for reflection in AI software	1
Obtaining of European R&D and other research results on new for reflection in AI software	1
Logic circuit automatic synthesis technology for ASIC behavior specifications	1
Support software for ADA compiler (portable debugger, etc.)	1
ADA library software and technical information	1
BIOS comparison utility program	1
BSD networking software	1
Software for making possible the exchange of CAD/CAM systems' data	1
Robot simulation software for CAD/CAM system	1
Drawing information software for use on the InterCAP CAD system	1
Dynamic visual simulation software using CAD system	1
Program for data exchange between CAD systems	1
Software for converting CAD data to electrostatic plotter raster type	1
CD-ROM disk drive technology	1
Software for exchange of CD-ROM media received data	1
COBOL program source code analytical tool	1
CRT control software (graphic controller device driver)	1
Software for database management of computer support software using C language	1

Software for inspecting C language system	1
C language library software and technical information	1
Utility for handling set-up of EISA products	1
General-purpose simulator for waiting queue for factory automation (FA) use	1
FDDI network station management program	1
Technology related to FORTRAN pre-compiler	1
FORTRAN language compatibility inspection software	1
Control "firmware"/"hardware" and evaluation method for HDD position decision support technology	1
Mechanical system CAD software for use on workstation (WS)	1
Program to run on WS	1
Calculation program for IATA's (International Aviation and Transportation Association) rules for handling dangerous goods	1
PC filing system	1
Software for PC development, communications, etc.	1
BIOS program for PCs	1
Software for expanding Japanese language common specifications for PCs	1
ROM BIOS for PCs	1
PC software for development, communications, CG creation	1
BIOS for PC mouse	1
Development support software for applications programs using PC operating systems (OS)	1
3-bit bus compatible with 16-bit PC	1
Development tool for PC knowledge-base system	1
Program for predicting PC maintainability and reliability	1
Development tool for knowledge-base system in mainframe environment	1
Technology related to design of LSI for use in IC card	1
IC card reader, data transfer and exchange system, and apparatus	1
IC card system related to IC card and IC card reader and writer	1
Software for communications protocol control, etc. for IC card	1
Technology related to one-chip microcomputer for IC card	1
IC design software	1
Software for use on machines compatible with ISDN standards	1
Japanese-language multi-window	1
LAN transmission protocol software	1
Emulator software package for LAN	1
Software related to LCD optical characteristics simulation	1
LSI circuit and lay-out design software	1
Support software for LSI logic design and inspection	1
Technology for LSI and apparatus, systems, and liquid crystal indicator apparatus	1
Software automatically generating test pattern for LSI breakdown diagnosis	1
Technology related to CAD tool for LSI design	1
Capacity and resistance simulation software for LSI design	1
Software for LSI defect analysis	1
File change software	1
Software for image quality of MR imaging (MRI)	1

Database software that can run on two different operating systems (OS)	1
Software, etc. for operating systems and communications control	1
PC OS	
Microcomputer OS and communications software	1
PC OS 860 board support software	1
File compression software for PC OS	1
2- and 3-dimensional drawing representation software	1
LAN driver development kit(software)	1
Patent for manufacturing, use, lease, and sale of synchronous bus	1
Specification inspection test program for OSF/1 and OSF/Motif	1
Maintenance for OSF/Motif and its specification inspection test program	1
Intermediary software for operating system (OS) and application	1
Software for reading OS from magnetic disk apparatus to computer CPU	1
Program for drawing analytical results from collision analysis software	1
Integrated applications software for window system	1
PC support system for foreign exchange and capital dealing	1
Software for development and revision of software for private answer system [-voicemail]	1
Software for research on artificial intelligence using Prolog	1
RM Fortran compiler, run-time library, etc.	1
Encryption software for data communications	1
Analytical simulation program for SCN and SC digital integrated circuit	1
Software for controlling SCSI standard hard disk	1
Software for improving direct arithmetic capability for SKY system and workstation	1
Software for more efficient arithmetic management in SKY system	1
Technology related to evaluation board for SLIK chip set	1
Source code for system programmer development tool	1
Network management software using SNMP for workstation (WS)	1
Software maintenance technology for array processor using WS	1
Communications software to support TCP/IP protocol	1
Board level computer	1
Development support software for TRON-GMICRO specification 3-bit MPU	1
UNICOS and UNIX system V release 3.0	1
UNICOS and UNIX system V release 4.0	1
Japanese language UNIX OS for UNIX SPARC workstation	1
Various CAD data management technologies for UNIX/X-Window systems	1
Developer evaluation package for production management packages for UNIX-WS	1
OS capable of binary exchange with UNIX	1
Software for connecting UNIX server and PC in network	1
Benchmark program for evaluating the capabilities of UNIX multiuser system	1
Real-time operating system with UNIX interface (machine tool control)	1
Japanese-language application environment for UNIX system V	1

Cobol language operating on UNIX system and WINDOWS	1
Software supplying files between UNIX workstations	1
Functional system programming software for UNIX environment	1
UNIX system operating system	1
Maintenance of network management software for UNIX system	1
Network management software for UNIX system	1
Software moving software for PC OS in UNIX	1
Tool for evaluating capabilities and testing level-down of functions in UNIX product development	1
UNIX financial accounting system software	1
UNIX graphics user interface program	1
UNIX storage management program	1
Software (for UNIX) for raising reliability by making disk apparatus into two layers	1
Software offering man-machine interface for UNIX	1
UNIX communications protocol	1
Data compression technology for VTR channel reservation	1
Bit map type font for terminal linked to WS	1
Market research, etc. on micro-conferencing system using WS	1
Communications software for WS OS and network	1
WS software (Character font for Chinese national standard information exchange)	1
Desktop publishing software for WS	1
Network software for WS	1
Network communications software for WS	1
Feed server software for WS	1
Program development tool for WS	1
Language software and documentation for WS	1
Language processor software and optical disk driver software for WS	1
Electromagnetic compatibility analysis software for WS	1
Emulation software for use on X-Window	1
Software, etc. for driving DTP (desktop publishing) system	1
Software offering X-Window tool kit interface	1
Software for X-ray analysis apparatus	1
Software for analysis of protein and nucleic acid sequence	1
Printing technology and trademark for outline font	1
Software that provides characteristics of analog circuit simulation IC	1
Computer support design system software for apparel	1
Tool with application GUI	1
Application development support program	1
Maintenance technology for array processor software	1
Antenna impedance analysis software	1
Software for operating image scanner	1
Drawing information software for illustration	1
Manufacturing technology related to inkjet print head	1
Intelligent gateway server, etc.	1
Classification software for input data	1
Analysis and calculation software for input data	1
Software guide to art museums in Vienna	1
Expert systems software	1
Simulator for operating of ethyl benzene manufacturing process	1



Emulation software	1
Spreadsheet software for engineering and scientific fields	1
Office software	1
Compiler, etc. for object oriented programming language	1
Object oriented database and development language	1
Option dealing system software (financial product transaction system)	1
OS and application software	1
OS test version	1
Technology for improving performance of operating system	1
Operating system	1
Operating system	1
Software for improving performance of on-line management and batch management	1
On-line management software	1
Driver software for connecting color printer and PC	1
Software for 3-dimensional liquid combustion analysis and basic design for gas turbine combustor	1
2.5 inch hard disk drive apparatus using glass board	1
DA tool supporting design of modules for cash/arithmetic, etc.	1
Software for credit card operations	1
Graphical OS	1
Graphical user interface development software	1
Graphical user interface (GUI) construction tool	1
Program offering graphical user interface	1
Graphical user interface development tool	1
Data processing software related to color and shape of graphics images	1
Software for outputting content of graphics indicators' contents	1
Software for constructing graphical user interface	1
Graphics development tool	1
Software for making gray scale font	1
Software development tool that can form object without coding work	1
Integrated software for code changing capability, type style and integration, editing	1
COBOL compiler (high-performance level II COBOL)	1
Programming language management system software for common Lisp specifications standard	1
Analytical program, etc. using concrete general-purpose finite element method	1
Data searching software for compact disk	1
Computer graphics related software	1
Software related to security management of computer systems	1
BIOS software for hard disk control	1
Technology related to computer display monitor	1
Computer program for 2-dimensional non-continuous transformation analysis	1
Logic circuit design support software using drawing technology	1
Simulation technology for molecular design using computer	1
OSI tester software related to computers	1



Technology related to computer graphics indicator method and apparatus	1
Outlining software for European and American letters for printer	1
Real-time software	1
Technology related to computer connection board	1
System for accessing computer errors and preventing them	1
Technology related to computer graphics indicator apparatus	1
Software for converting CG (computer graphics) information into video information	1
Software for analyzing operating conditions of computer system	1
Word processing and other software	1
Computer program (PC GLOBE)	1
Design and manufacturing software for computer help	1
Software for developing application programs in computer image management	1
Software for improving efficiency of computer development	1
Design technology for computer apparatus and peripherals	1
Outline font data for computers and peripherals	1
Software for computer supported engineering and factory automation	1
General-purpose software for computer supported automated design	1
Performance measurement software for computer peripherals	1
Software related to conversion of computer output data	1
Software for computerized development of software	1
Software for image management on computer	1
Computer SQL system inspection software	1
Driver software for computer connection	1
Computer communications software	1
Software for achieving computer communications protocol function	1
Technology related to method of sending data within computer	1
Binary program for BIOS	1
Control software for input between computer itself and peripherals	1
Streaming tape drive magnetic memory apparatus for computer	1
Digital font data file for computer	1
Electronic dictionary for computer	1
Computer drawing software	1
Thermal printer and heat transfer ribbon for thermal printer	1
Typeface software for sign card system	1
Software related to system safety and reliability	1
Productivity tool for system development	1
Software tool for system management	1
Test program for quality inspection of system descriptive language management system	1
Software for converting system design-use language into logical integrated language	1
Software maintenance for simulation descriptive language	1
Software for wave-type indication of simulation results on X-Window	1
Analytical software for simulation results	1
Visual system image projection apparatus using CG (computer graphics) using computer	1

Database creation software for image projection apparatus for simulator	1
Device driver for array disk system for supercomputer	1
Application development software for super-minicomputer	1
Manufacturing technology for scuba diving measurement apparatus	1
Source program documentation software	1
Intermediary software for socket interface and program development package	1
Software for adding Japanese character function to software	1
Software interface development software	1
Software bug management tool	1
Structural analysis method for software (method for measuring complexity, method for analyzing internal structure)	1
Source code management software	1
Technology and trademark related to program	1
Software for managing software development process	1
Technology for software development support tool	1
Software technology	1
Simulation program for software design support	1
Software and technical information for software evaluation analysis	1
Software supporting improved production efficiency and quality in software development	1
Software for managing turbine axle vibration	1
Design program for turbo-fan engine design	1
3-dimensional software for analysis of viscous flow of multi-end wing for turbo machinery	1
Software related to fax network for computer	1
Operational analysis and process design simulator for terephthalic acid manufacturing	1
Software for data sorting and merger	1
Software for visualization and easily understood indication of data	1
Database management software, graphics software, etc.	1
Database management software program	1
Database and information searching system software	1
Automated back-up software for data management system	1
Data conversion software	1
Data exchange communications software	1
Technology and support service related to data visualization software	1
Digital audio sound system	1
Manufacturing technology related magnetic tape apparatus for digital data recording	1
Control technology for sending information between digital dispersion type instrumentation system and computer	1
Disk recording and reproduction system for optical recording and reproduction on disk	1
Outline font and development software for desktop publishing	1
Digitally code bit-map document design	1
Software for digital signal management	1

Program development tool for board signal management for digital signal management	1
Software for high-efficiency audio conforming and compounding for digital communications apparatus	1
Handwriting recognition software using neuron network	1
Software for controlling multiple terminals linked by network	1
Software for connecting different types of machines using network	1
Network system software	1
Software for constructing network apparatus	1
License manager software for managing software on network	1
Standards for network control	1
Software for monitoring entire network	1
Operating system for network	1
Battery life measurement software for notebook PC	1
General-purpose circuit simulation for high level analysis of noise, distortion, and electrode zero	1
Domain program for software not reliant on hardware architecture	1
Thin film magnetic head for recording and reading hard disk drive	1
Utility software for running applications on hard disk	1
Hand-held computer technology	1
Manufacturing method for bar code reader	1
Virtual prototyping system	1
Process simulator for design, research, and transport of bio-process	1
General-purpose technical calculation software for PC	1
Software related to pipeline monitoring control	1
Software for PC measurement control	1
Manufacturing technology for super server computer for PC LAN	1
Development software for PC multi-window	1
PC operating system	1
Software for studying PC structure and usage rate	1
Software for print shop using PC	1
Application software and trademark for PC CAD	1
Software for directly connecting printer to PC network	1
Terminal emulator for PC	1
Technology related to 3-bit bus for PC	1
PC BIOS	1
Software for conversion to PC CAD format	1
Chip and board software for SCSI interface for PC	1
Technology related to PC pen input	1
Expert system development support software for PC	1
PC OS, etc.	1
PC software	1
PC OS and other software	1
Network file system software and output software for PC	1
Software for PC font creation	1
PC CAD system for designing plant instrumentation	1
PC OS	1
Software	1
Know-how related to realizing the color of color samples on printer, etc.	1
Business analysis software	1

Video game machine and game software	1
Software for video editing	1
Monitoring and control software for bill management system	1
Simulation software based on pinch method	1
Program for compression and reproduction of file data capacity	1
Software for file searching	1
Development assistance software for facsimile production	1
Program for predicting fan noise mode structure	1
Film plotter control software	1
Photo run compiler	1
Object reproduction of photo run compiler	1
Software for testing photo run language compatibility	1
Font data and font software	1
Font software	1
Font and font scaler software	1
Font and appropriate font processing (enlargement, reproduction, turning) software	1
Blow form simulation software	1
Process simulation program for modeling of plastic extruder	1
Technical training related to CAD software for plant piping design	1
Technology related to printer products and other image recording apparatus	1
Technology and trademark related to printer font	1
Font and font creation software for printer and plotter	1
Printer manufacturing technology for fixing jaggedness of dot matrix printer letters	1
Printer controller software	1
Technology related to dot data for composing European and American characters for printing	1
Driver software for printer interface board	1
Manufacturing technology and trademark for printer pin tractor	1
Printer programming language and trademark	1
Image management technology for printer	1
Source program and technical materials for Japanese character compression software for printer	1
Software related to printer characters	1
Conversion software for printer output data	1
CAD software for print board design	1
CAD software and trademark for print plugboard design	1
Technology related to remote controller called play programmed commander	1
Programming language compiler	1
Library research software relying on programming language	1
Software for checking program compatibility with U.S. POSIX standard	1
Program development language, etc.	1
Program development software	1
Program development debugger and calculation management sub-routine	1
Program language software	
Software for creating optimal energy process for processing industry	1



Processor driver software set (C compiler, run time software)	1
Product design and animation software	1
Product design software	1
Software for reproducing protocol test items for use in printing drawings to international standards	1
Page descriptive language program	1
Transfer of patent application in process for pen-type mouse	1
Communications card for connection with host and software for card interface	1
Software related to automatic scoring of bowling	1
3-dimensional graphic software using volume rendering technology	1
Software for incorporating pointing device	1
Page descriptive language software	1
Printer software and related software	1
Software for converting printer language for output in photo- typesetting	1
Printer language interpreter technology	1
Software for operating analysis and design simulation for polystyrene manufacturing process	1
Process simulator for operational analysis, etc. of polyvinyl chloride manufacturing process	1
Technology related to microcomputer and application system	1
Micro fuzzy compiler for microcomputer	1
Software for developing application software using microprocessor	1
Microcomputer OS	1
Software for driving mouse	1
Software for common use of files by PC and WS	1
Software for connecting MO drive to PC	1
Software for outputting PC image on high-quality image printer	1
Software for using PC information on other type of machine	1
PC system software (printer driver)	1
Software for output to CG printer for PC	1
PC OS	1
Terminal emulator software for PC	1
Controller software for laser printer for PC	1
Multi-processor OS	1
Software providing man interface function	1
Manufacturing and inspection technology for central arithmetic management apparatus for minicomputer	1
Technology for speeding up information management of electronic apparatus system using memory	1
Permanent memory card-type database software	1
Technology related to protocol for modem network management system	1
Software related to computer (OS)	1
Monte Carlo simulation software	1
Dealer support system software for Euroyen interest rate futures and options transactions	1
OS for UNIX WS	1
Software for 5-tone wireless machine for Europe	1
Software for automatic broadcasting apparatus for broadcast channel	1
Manufacturing technology for laptop computer cabinet	1



Real-time OS, software development support tool, compiler, etc.	1
System development software using real time market price information	1
Real time solid modeling system	1
Relational database compiler	1
Manufacturing technology for laser printer controller	1
Software for designing optical parts of laser	1
Control software for laser printer, etc.	1
Composition information for ASIC behavior condition setting data for laser printer	1
Laser printer controller software	1
Technology related to laser printer bit map font	1
Development support software for developing radar technology identifying ships and airplanes	1
Software for calculating resist pattern formation	1
Software for measuring response time and checking circuit connection	1
Software for delivering and receiving information between hardware of different levels	1
Software for expanding functions of table preparation software for PCs	1
Table preparation software and other software for PCs	1
Table preparation software compiler for PCs	1
Expert design system software for design of rotary compressor	1
Software related to robot approach skin sensor and sensor management technology	1
Educational system software for workstation	1
Workstation manufacturing technology and hardware for its use	1
Software for driving indicator screen of workstation	1
Object oriented database software for workstation	1
OS for workstation	1
Compiler and documentation for workstation	1
System software for workstation	1
Bus technology for workstation	1
Software related to multi-media board for workstation	1
Financial calculation software for workstation	1
Semiconductor manufacturing simulation software for workstation	1
General purpose CAD software for workstation	1
Software for word processing, database, spreadsheet, etc.	1
Spell-checking and correcting software for word processor	1
Software related to example collection for word processor	1
Transaction management software for warrant trading	1
Noise prediction program for compressors, combustors, and turbines	1
Position evaluation software	1
Exchange dealing software	1
Software for managing information from different types of computers on identical computers	1
Basic software for connecting different types of computers	1
Control software for moving wireless machine	1
Toxicity evaluation software for medical development	1
Document dictionary software for printing	1

General use analytical software for spaceship radiant heat transmission in space environment	1
Software for analyzing electro-magnetic compatibility necessary for space apparatus design	1
Image management software	1
Control software for apparatus producing images	1
5-language dictionary database for English, French, German, Italian, and Spanish	1
Western number outline fonts and bit map data conversion software	1
English hyphen insertion software	1
Software for English document text file conversion	1
English letter and Japanese character vector fonts and bit map conversion software	1
English outline font data and conversion software	1
Simulation program for liquid crystal display characteristics	1
Liquefaction analysis program	1
Yen-based options analysis software	1
Design and development program for centrifugal compressor and digital turbine	1
Software for developing European language font data	1
Software for printing European language letter fonts	1
Data collection and analysis software for temperature monitor	1
Chemical data management program	1
General process simulator for chemical plant engineering	1
Software related to energy conservation technology, etc. for chemical product manufacturing	1
Variable control software for chemical apparatus	1
Spector database software for composites	1
Program using virtual memory method	1
Software for damage inspection of vortex electrical current in steam pipes used for pressurized water nuclear reactor	1
Software related to unified control system for home electronics products	1
Chemical technology management software	1
Image data compression program	1
Software for image data application	1
Medical-use 3-dimensional image construction software using image management technology	1
Software related to LAN system for image management apparatus	1
Software offering development environment for image management software	1
Image management processor software	1
High-speed raster image processor (software) for image management	1
Japanese language operating software for image reading apparatus	1
Software and technical information related to image recognition system	1
Image indicator and control software	1
Accounting management software	1
Conversational mine-well data analysis software	1
UNIX software with free-type system exchange connection specifications	1
Software for vibration analysis of rotating structures	1

Analytical program for aerodynamics and movement of rotating wing airplanes	1
Rotating wing noise prediction program	1
Technical assistance and software for system integration	1
Software to simplify programming of tiered software	1
Control software for detection and correction system for inconsistencies between databases	1
Integrated software running on different operating systems (OS)	1
Software for creating programs to control various instrumentation	1
PC program for inspecting the achievability of various industrial development projects	1
Computer supported design software for various control circuits	1
Program for calculating optimal investment allocation for securities	1
Software for nuclear medicine data management apparatus	1
Probable safety evaluation and analysis program	1
Data-providing software for stock investment analysis	1
Stock investment software	1
Software for entering patient ID information	1
Software for adding 3 writing styles to Japanese character font	1
Software for use in international airport information system for passengers	1
Information, trademark, etc. related to corporate commerce and operations	1
Source code program software for rare gas mass spectrometer	1
Software for creating, calculating, and displaying geometric shapes	1
Software for producing design drawings for machinery and buildings	1
Software for use in machine design	1
Computer assisted manufacturing (CAM) software	1
Machine design support software	1
Expert system construction, etc. using inductive rule generation method	1
Memory management software	1
Technology for use in CD-ROM for reproducing memory	1
Technology related to optical disk for reproducing memory	1
Technology related to common programming interface	1
Boundary element method analytical program for electrical and magnetic fields	1
Software for planning to raise efficiency and rationality of operations	1
Software related to operational management and quality management	1
Program for estimating supersonic air power and air power heating	1
Software for measuring solubility and insolubility in metals and weight of metals	1
Software for financial swap transactions	1
Software for financial institutions and manufacturing industry	1
Software related to customer management system for financial institutions and credit card companies	1
Dealing support software for financial institutions	1

Development support software for programs for financial institutions	1
Software for programs and development support for programs for financial institutions	1
Analysis and management program for interest rate and currency swap transactions	1
On-line checkbook issuing apparatus using PC for use in banks	1
Software for total system of management and quality control improvement	1
Software and related documentation for creating programs for control of instrumentation	1
Software for analyzing structure of crystals	1
Software for managing core of nuclear power plant reactor	1
CAE tool for development of gate array making it possible for customers to program	1
Software for use by exchange center	1
Language management system software for switchboard	1
Patent and know-how related to optical disk	1
Source code and specification documents for optical disk controller	1
Interface software for optical disk drive	1
Software for optical disk file management and for transfer from magnetic to optical disk	1
Software related to driver control for optical disk apparatus	1
Technology related to optical disk loading mechanism	1
Software to control optical character recognition and reading apparatus	1
Software for controller part for transfer for opto-magnetic disk apparatus to added optical disk	1
Technology related to opto-magnetic memory media	1
Technology related to control software for manufacturing process	1
Software for generating, calculating, and displaying geometric shapes for use in design, industrial technology, and manufacturing of industrial products	1
Computer supported design software for industrial print boards	1
Technology related to parallel processing method for software development for industrial robots	1
Control programs for machine tools (memory expansion support)	1
Expert system for planning industrial manufacturing process	1
Statistical calculation software for process management	1
Structural analysis software	1
PBX interface software	1
Integration software for integrating reservation information system for airline freight	1
Software for airline reservation system	1
Software for supporting development, design, and manufacturing of airplanes	1
Software for use during airplane design	1
Screen display software for high resolution graphics mode	1
Modem software for high-speed facsimile	1
Stability analysis program for high speed axial system	1
High-speed management program	1



High capacity FDD technology (optical server, low-rank integratibility, program code, etc.)	1
System software for international ocean transport of containers	1
Materials development support software	1
Interference check program for 3-dimensional graphical simulation	1
3-dimensional graphical simulation program	1
Software related to 3-dimensional image management	1
Software and documentation related to 3-dimensional image management	1
Software and computer-attached apparatus related to 3-dimensional image management	1
Software related to 3-dimensional machine design	1
Image management software based on visual sensor information	1
Visual dialog-type general-purpose simulator	1
Software for cash flow analysis, etc. of capital exchange dealing	1
Capital allocation analysis software	1
Software for integrated management of capital debts	1
Software adding time/continuous number display, automatic printing and sorting functions, etc.	1
CPU, etc. used in FLCC on airplane	1
Manufacturing technology for data cartridge drive	1
Software for analysis of magnetic memory phenomenon	
Expert system for searching database using natural language (English)	1
Graphics system software for automotive steering design	1
Computer analysis technology for automotive engine cylinder head	1
Specifications for software for layout and design of automotive parts	1
System software for supporting layout and design of automotive parts	1
Data management software for mass spectrometer	1
CAD automatic wiring software for mounting board design	1
Software for promoting corporate office automation for raising the efficiency and rationalization of product development and operations	1
Collision simulation program for research on vehicular passenger safety in collision	1
Software for design of integrated circuit electronic board	1
Self-testing number processing apparatus attached to independent testing program for processing apparatus	1
Product aggregation software	1
Technology related to small fixed magnetic disk apparatus and bipolar logic IC	1
On-line database system for retailing	1
Drawing management system software for housing information reading and for data searching, etc.	1
System software for information services (PC communications, database searching)	1
Technology related to information management apparatus products and to their manufacturing apparatus	1
Entrustment with software development for software related to analysis of condensation flow of steam turbine blades	1



Software for simulating plant growth	1
Software for plant growth modeling and view simulation	1
Software for computer graphics representation of woods, trees, and flowers	1
Usage technology related to artificial senses know-how	1
European multi-tasking multi-media information on development of artificial intelligence software	1
Software for visual testing at time of drawing and character recognition	1
Software related to drawing images	1
Software for drawing management descriptive language interpretation and for printer control driver	1
Drawing information software	1
Development for adding Japanese character capability to software for managing drawings and technical information	1
Software for numerical formula management and numerical calculations	1
Visualization software for numerical data	1
Data management program related to production management, asset management, and distribution planning	1
Plan support software for production planning, etc.	1
System software for management of assets and liabilities for insurance companies	1
System software for insurance contract management	1
Computer-aided manufacturing software	1
Raster graphics driver software for electrostatic plotter	1
Particulate analysis program for use in exploration and development of oil and natural gas	1
Software for analysis of data on pressure inside oil wells	1
Applied analysis of oil well temperature and pressure and casing pipe simulation	1
Software for evaluation optimization and economic viability of oil refining and petrochemical plants	1
Oil refining line-type planning program	1
Software for collecting oil refinery apparatus operating data and displaying by use	1
Technical training program for oil refining apparatus operatives	1
Program for searching and outputting from oil refinery apparatus operating information database	1
Operating optimization and control software for oil refining apparatus	1
Planning software related to oil refining	1
Analytical software for planning oil product production and evaluating it after the fact	1
Environmental estimation software for oil accumulation	1
Graphics software for displaying results of oil reserves evaluation simulation	1
3-dimensional structural analysis package, etc. for searching for oil, etc.	1
Data management package for 2-dimensional dialog-type earthquake investigation for investigation of oil, etc.	1

Program for simulating operation of catalytic conversion apparatus	1
Simulator for training operators of catalytic cracking apparatus and propylene distiller	1
Support software for design technology	1
Software related to algorithm using inner point method for linear planning problem	1
Software for calculating ship hydraulic power	1
All-directional bar code reader	1
Operating system for two-directional voice response apparatus	1
Transformation-type optical memory method and manufacturing technology for apparatus and medium	1
Software for use in integrated network management system	1
Integrated heat transmission analysis simulator	1
Software related to advanced control technology for apparatus	1
Software for linking to other airlines' reservation systems	1
Program with capabilities for design and design drawing creation for multi-pipe heat exchanger	1
Multi-level virtual memory system connection software and long-distance job insertion	1
Multi-level virtual memory system connection software, etc.	1
Software for treating multiple files as one file	1
Software for using free CAD system on multiple machines	1
Software for calculating optimal loading for multiple types of cargo	1
Manufacturing technology for multiple objective cursor control keyboard switch	1
Visual dialog-type general-purpose simulator for modeling waiting lines	1
Software for evaluation and analysis of manufacturing facilities applying waiting line theory	1
Software for making patterns making up Taiwanese	1
Atmospheric disturbance spread simulation and graphics post program	1
File software for large mainframe computer	1
Data compression software for large host computer	1
Automatic operation software for large general purpose computer system	1
Test program for large general-purpose computer	1
Technology related to design, mounting, and manufacturing of large general-purpose computer	1
System software for large general-purpose computer	1
Unified transaction system for gain transactions	1
Software development assistance tool that becomes driver toward objective of simple test process	1
Knowledge base management software	1
Software for evaluation and prediction of wastes that do not mix in underground water (multi-phasic condition)	1
Software related to analysis of earth structures and mine quantity calculations for metal resources	1
Program for managing earthquake prospecting	1

Program for easy management of earthquake prospecting data and for creating earth layer cross-section drawings	1
Data analysis program for earthquake prospecting	1
Display and analysis software for geographic information	1
Inner and Sung dynasty fonts for Chinese characters (15 dot x 16 dot, etc.)	1
Software related to character pattern data making up Chinese-language characters	1
Chinese national standard character font	1
Technology for preventing multiple layer writing on postscript opto-magnetic disk	1
Currency option pricing software	1
Price-setting management program for currency option transactions	1
Risk management program for currency options and other new financial product transactions	1
Efficiency calculation software for conventional propeller	1
Communications network management software	1
Software for realizing communications procedure through communications satellite	1
Design and construction software for network system for communications control	1
OS for controlling dissemination of software in communications network	1
Software for automatically siphoning off from network the least used files	1
Design of control system for steel cooling line (software)	1
Natural gas pipeline simulation software	1
Software for electric and electronic circuit design	1
Software for converting data documents used by computer	1
Technology for simulation, evaluation, and analysis using computer	1
Technology related to computer graphics capability	1
Computer software (character font data)	1
Source code for software controlling directly the hardware side of computer	1
Diagnostic software for inspecting and testing computer printer apparatus	1
Software providing support environment for computer development	1
Technical materials related to computer language management technology	1
Technology related to design of computer peripherals (technology for conversion from analog to digital)	1
Drawing circuit technology related to display apparatus for apparatus attached to computer	1
Adapter and loading software for connection of computer token ring network	1
Technology related to electronic parts for computers and next generation computers	1
Software for computers and their peripherals	1
Diagnostic software for inspecting and testing extender apparatus for computer peripherals	1

Manufacturing and assembly technology for computers and other information management products	1
Software relating to manufacture and use of computer auxiliary apparatus	1
Software related to computer laser beam printer	1
Production and use of products for computers incorporating semiconductor integrated circuits	1
Project management software using computer	1
Software used in electronic printer	1
Source code for electronic mail service software	1
Software for computer design of electronic circuits and apparatus	1
Support software for electronic circuit design	1
Software for electronic circuit design	1
Method for data connection and control between electronic apparatus	1
Software for automated design of electronic apparatus and IC/LSI	1
Manufacturing technology and computer programs for computers	1
Manufacturing technology for central arithmetic processor of computer	1
Computer software for displaying characters on display	1
Manufacturing technology for computers and floppy disks	1
Maintenance technology for computers and peripherals	1
Development and inspection programs for computer peripherals	1
Computer manufacturing technology	1
Technology related to computer products and manufacturing apparatus	1
Manufacturing technology for terminal connecting to computer input apparatus	1
Computer auxiliary apparatus (self-testing data processing system)	1
Computer data image software	1
Computer software (compiler)	1
Development technology for computer software	1
Computer software for table calculation	1
Evaluation analysis and design support software for electro-optical system	1
Software for communication between electronic notebook and PC	1
11-language conversation software for electronic notebook	1
Database software for electronic notebook	1
Simulation program	1
Software for electrical apparatus' measurement apparatus	1
Simulation program for multiple reaction in production of composite resins for painting	1
Software for soil nature research and pesticide application management	1
Improvement in use of source program for engineering CAD software	1
Statistical analysis software with overall functions for statistical analysis	1
3-D CAD/CAM system for integrated machinery systems	1
Integrated production management software	1
Dynamic visual simulation software	1
Software for efficient ship allocation of coastal shipping	1
Computer program related to textile printing technology	1



Training system software for Japanese stock portfolios	1
Control software for input apparatus	1
Software for analysis and control of input information, menu editing for system management	1
Software for easily calculating heat transmission, convection, radiation of heat	1
Software for analyzing heat environment	1
Software for heat exchanger network simulation and heat balance calculation	1
Software for simulation of heat conduction analysis	1
Heat flow analysis software	1
Analytical software for efficient re-use of heat	1
Software for analyzing chemical reaction fluids accompanying combustion	1
Maintenance for software for simulation of viscous fluids	1
Software for calculating pressure loss, fluid flow, etc. for plumbing system	1
Drawing software for plumbing design	1
Drawing and data management support software for plumbing design	1
Software for management, storage, and evaluation of board thickness inspection data for plumbing parts	1
Program for cost evaluation of transmitted electricity and for scheduling for electrical power plant operations	1
Program for evaluating reliability, availability, and safety of electrical power generation facilities, etc.	1
Design support software for semiconductor basic elements	1
Software for inspection of condition of metal wire connections on semiconductor chips	1
Design software for semiconductor and print board	1
Image management system for electron microscope for semiconductor inspection	1
Semiconductor integrated circuit library development software	1
Software for testing semiconductor integrated circuits	1
Process device simulation program for displaying semiconductor internal characteristics	1
Software related to sheet metal processing	1
General-purpose simulation software	1
General-purpose process simulation program and support software	1
General-purpose software	1
General-purpose real-time OS	1
Tool for adapting Fortran software for mainframe to parallel processing computer	1
Mainframe OS	1
General-purpose support software for design and drawing	1
Software for long-distance operation of mainframe computer	1
General-purpose program for analysis of heat fluids	1
General-purpose non-linear structural analysis program	1
General-purpose non-linear 3-dimensional structural analysis program	1
Software for sales, distribution, and financial management	1
Sales territory management software (clients, products, quantities, prices)	1



Software for simplifying program video reservation	1
Nonlinear structural analysis software	1
Software for analyzing irregular 3-dimensional ending flows	1
Process simulation software for considering unbalanced substances and heat transfer speed	1
Recovery system software for test flight control	1
Technology for simulating electrical characteristics of micro-transistor	1
Program for 2-dimensional analysis of flow expansion for use in analyzing particle generation	1
Software for expanding capabilities of chart calculation software	1
Chart calculation software	1
Software for evaluative analysis and design support	1
Software for distinguishing and recognizing an unspecified number of voices	1
Technology and software related to inkjet printer head for cloth printing	1
Software for inspecting shape of parts	1
Software with capability for common holding of files among multiple computers	1
Software for measuring spectrophotometry	1
Software offering dispersed computing environment	1
Tool for dispersed computing	1
Autonomous dispersion method software for fault tolerance on dispersed system	1
Dispersed management-type database management system	1
Software and function expansion support for dispersed management	1
Simulation software for molecular system's dynamic behavior and characteristics	1
Software for use by experimenters to input, edit, analyze, etc. molecular models	1
Software for stable placement and dynamic characteristics analysis of molecular structures	1
Molecular dynamics program	1
Software for displaying characters' external shape and for changing that shape	1
Character font data and related software technology	1
Character font creation and revisions software	1
Software for implementing document management and editing functions	1
Software related to document management system	1
Desktop publishing software for creating and editing documents and their layouts	1
Support program system related to parallel processing program	1
Development tool for standard computer software	1
Real-time executive system for standard computer	1
Software for inspecting compliance with U.S. government information management standards	1
Software technology for insurance mathematics	1
Software for measurement and analysis of automotive parts friction using radioactive isotopes	1

Software related to sewing technology	1
Imitation software	1
Software for incorporation of IC chip set for automotive telephone and receiver	1
Software for calculating electronic condition of atoms and molecules using dense general functions	1
Software for wireless circuit design	1
Technology for non-stop computer	1
Software for simulating fluid behavior in oil and gas layers	1
System for searching for value-added in securities management	1
Molecular structure analysis software for organic materials	1
Analytical software package for limited element mesh creation	1
Pre- and post-processing software for analysis of limited elements	1
Structural analysis and design software using limited element method	1
Limited element method program	1
Limited element method electromagnetic location analysis program	1
Limited element method simulation software for analysis of viscoelastic fluids	1
Numerical value calculation software for analysis of flow characteristics of solvent polymers	1
Software for flow analysis	1
Simultaneous equation free software	1
Logic circuit simulation software for design and evaluation	1
Control and editing apparatus for voice video information of AV apparatus attached to PC	1
<b>69 Other electronic applications apparatus</b>	<b>66</b>
Manufacturing technology for video tape recorder	8
Technology related to superconductive magnetic resonance diagnostic apparatus	2
Technology related to VTR with on-screen reservation system	2
Patent for ultrasound diagnostic apparatus	2
Technology related to manufacturing of business-use video camera	2
On-screen video program reservation apparatus for VTR	2
Technology related to manufacturing of business-use video camera	2
Patent related to system for electronic still video and technology for silver "en" camera	1
Technology for time-based corrector for VTRs, etc. using image signal management	1
Manufacturing technology for electromagnetic tension control apparatus	1
Patent and technology for diagnostic X-ray apparatus	1
Technology for intelligent VASS function for VTR	1
Technology related to television monitor	1
Technology related to electronic sketch pad	1
Technology related to simple program reservation system for VTR	1
CCD circuit, system, and apparatus for still video camera system	1
Patent related to VTR program system	1
Manufacturing technology for optical disk player, optical disk recording media, and related apparatus	1
Technology related to "kanmen" program reservation system	1

Technology related to VCR programming system	1
Manufacturing technology for VTR remote control apparatus	1
Technology related to VCR on-screen on-screen reservation	1
Manufacturing technology and software for CDV and CD-I	1
Technology related to ink cartridge standard for home video printer	1
Fuzzy logic technology for video camera	1
Fuzzy logic applications for video camera	1
Sloped magnetic field coil technology for medical diagnostic apparatus with high magnetic field nuclear magnetic resonance	1
Technology related to recording and reproducing VTR image signal	1
Technology related to electron gun and electro-optical system in scanning electron microscope	1
Manufacturing technology for MF-type CO <sub>2</sub> laser	1
Patent related to VTR compatible with video program system	1
Technology related to magnetic resistance and magnetic interrelated coupling for man-made lattice thin film	1
Technology related to VTR using tape cassette	1
Technology related to 3/4 inch U-matic VTR	1
Manufacturing technology for recording-type optical disk player	1
Manufacturing technology for doped chrome hoste light single crystal laser oscillator	1
Manufacturing of X-ray signal wave height valve for energy dispersion-type X-ray analyzer	1
Technology for magnetic recording or reproduction method	1
Technology related to super-dense magnetic recording disk and micro leading-wave-route reproduction head	1
Technology related to range-finding apparatus applying semiconductor laser	1
Manufacturing technology for VTR television channel screen reservation timer	1
Manufacturing and inspection technology for medical-use YAG laser oscillator	1
Technology related to medical-use image diagnostic apparatus, sending and receiving from output apparatus, and output	1
Technology related to manufacturing and use of plasma source products	1
Manufacturing technology for unsealed RF excited carbon dioxide laser	1
YAG laser processor for magnetic encoder production	1
Technology related to magnetic resonance imaging for medical use	1
Technology for manufacturing apparatus using ultrasound to find defects in industrial products	1
Manufacturing technology related to video disk player	1
Manufacturing technology related to video reservation apparatus	1
<b>70 Parts for use in electronics and communications</b>	<b>148</b>
Semiconductor materials, joining materials, semiconductor elements and testing apparatus and system technology for them	8
STN (super twist nematic)-type liquid crystal display	6
Technology related to flash memory	3
Technology related to liquid crystal display apparatus	3

Semiconductor technology	3
Manufacturing technology for semiconductor apparatus	3
Manufacturing technology for RISC microprocessor (including VLSI circuit)	2
RISC microprocessor and memory, ASIC, etc.	2
Technology related to semiconductor apparatus, including SRAM, etc.	2
Patent related to manufacturing of light-sending and -receiving elements for semiconductors used in optical communications	2
Design, etc. for transceiver integrated circuit using twisted pair wire	1
Computer integrated technology applying RISC technology	1
PML integrated circuit (low power consumption circuit), "ka" integrated circuit for use in word processors and PCs	1
Design technology for WS (workstation) cache memory (SRAM)	1
Development and manufacturing technology for semiconductor elements used in pressure sensor	1
Technology related to deflecting yoke	1
Manufacturing technology for pulse traveling wave tube	1
Technology for semiconductor design	1
Patent, etc. for oxygen sensor	1
Manufacturing technology for signal conformity adaptor for data communications wiring for buildings	1
Epitaxial thin film formation method using MOCVD method for alloy semiconductors	1
Manufacturing technology for projection print mask	1
Technology for achieving anisotropic plasma, etching without undercut	1
Technology related to manufacturing of semiconductor luminescent elements for use in optical communications	1
Technology related to automatic writing microprocessor	1
Contact image sensor technology	1
Digital signal processor and telephone-use LSI using that technology	1
CMOS gate array integrated circuit	1
Patent related to amorphous silicon optical sensor	1
Design and manufacturing technology for 1 megabit DRAM	1
Composite semiconductor element wafer using organic metals gaseous phase growth method	1
Information management organization products and manufacturing technology (including semiconductor elements and semiconductor integrated circuits)	1
Technology related to ASIC including 8-bit CPU core	1
Introduction of composite semiconductor crystal growth method	1
Technology related to raising integrated circuit performance	1
Optical image elements for stepper photography lens	1
Design technology for digital camera LSI	1
Technology related to semiconductor products overall and to their manufacturing apparatus	1
Testing and inspection technology for semiconductor integrated circuits	1
Basic patent and manufacturing technology for insulated gate bipolar transistor	1



Floating small number arithmetic integrated circuits for co-processor of integer arithmetic MPU	1
Synthesized tuner and picture tube display for VTRs, TVs, etc.	1
Manufacturing technology for Taiwanese character font ROM for printer	1
Technology related to coating process for print boards	1
Linear CCD sensor system and integrated circuit and element technology for electronic blackboard	1
Technology related to electro-, optical, and magnetic products and FA (factory automation) apparatus	1
Technology for 64-bit RISC microprocessor and peripheral IC	1
Manufacturing technology for image management LSI	1
Design technology for CMOS microprocessor	1
Manufacturing technology for active matrix type liquid crystal display apparatus	1
Manufacturing technology for 3-bit microprocessor	1
Microprocessor technology for home video game machines' data management	1
Flash memory circuits from 1 to 4 megabits	1
Home electronics data communications technology (control interface)	1
Manufacturing method for semiconductor apparatus using compound semiconductors	1
Technology for stabilizing and improving functions of high dielectric liquid crystal	1
Technology related to semiconductor manufacturing and to wafer management, testing, and packaging	1
Semiconductor parts, devices, and circuits; manufacturing apparatus; and manufacturing technology for test apparatus	1
Design technology for CMOS 3-pin 16 megabit mask ROM integrated circuit	1
Design technology for CMOS 4-pin 16 megabit mask ROM integrated circuit	1
Patent for amorphous silicon switching elements for liquid crystal display	1
Patent for semiconductor laser, light-sending and -receiving elements	1
Technology related to semiconductor integrated circuit products	1
Technology for image-reading elements (CCD sensor) for image scanner	1
Small, high-sensitivity, low power consumption, low cost tachometric sensor (micro-bridge)	1
Crystal raising technology for high purity semiconductors	1
Manufacturing technology for 4 and 16 megabit DRAM	1
Epitaxial wafer technology using organic metal gaseous phase growth method	1
Technology related to manufacturing of light-sensitives for electronic photography (amorphous silicon conductor)	1
Basic technology for 1 megabit DRAM mask design and circuit design	1
Design and manufacturing technology for custom-designed semiconductors (gate array semiconductors)	1
Electric connector manufacturing technology	1

Patent related to microprocessor and 1-chip microcomputer	1
Technology and trademark for simplifying tests in special-use interruption integrated circuit (ASIC)	1
Technology related to semiconductor products (including super-scale integrated circuits)	1
Technology for forming III-V type compound semiconductor layers on board using gaseous phase reaction	1
Semiconductor apparatus manufacturing method using photo-resist with particle diameter of less than 1 $\mu\text{m}$	1
Development and manufacturing technology for 64 megabit DRAM	1
Design technology for semiconductor integrated circuit for AM/FM radio receiver	1
Technology related to manufacturing semiconductor products (including large-scale integrated circuits)	1
Technology related to twist nematic liquid crystal	1
Manufacturing technology for modulated twist nematic-type liquid crystal element	1
Manufacturing technology for terminal and connector	1
Technology related to the manufacturing, assembly, repair, and testing of automotive side-wind sensors	1
Patent for touch sensor with silver lead wire	1
Technology related to liquid crystal display monitor	1
Manufacturing technology for color picture tube and shadow mask	1
Technology related to manufacturing of liquid crystal display	1
Technology related to liquid crystal display panel	1
Semiconductor element manufacturing technology	1
Technology related to semiconductors for use in automotive telephones and portable telephones complying with European unified standards	1
Technology related to semiconductor-related products	1
Technology related to semiconductors, including VLSI, and their manufacturing apparatus	1
Design and manufacturing technology for semiconductor memory circuits	1
Patent related to semiconductor products and their manufacturing apparatus	1
Technology related to angle speed sensor apparatus	1
Floating point unit and MPU including floating point unit	1
Technology related to gallium integrated circuit (power amp)	1
Manufacturing apparatus for digital-analog converter	1
Technology related to semiconductors and their manufacturing apparatus	1
Multiplex driver liquid crystal display apparatus	1
Manufacturing technology, test apparatus, and manufacturing apparatus for VLSI, MPU, etc.	1
Technology related to manufacturing VLSI integrated circuits	1
Controller LSI technology for computer page printer	1
Analog-digital converter for video	1
Manufacturing technology for liquid crystal display using liquid crystal display panel manufacturing apparatus	1
Liquid crystal display device	1
Patent related to TFT liquid crystal display apparatus	1

Technology related to semiconductor products	1
MOS transistor patent	1
Ferroelectric substance thin film material compound and R&D on its manufacturing technology	1
Method for forming superconductive circuits and related technology	1
Patent related to receiver (tuner) for satellite broadcast reception	1
Linear CCD	1
Semiconductor integrated circuit for half rate speech coder	1
Technology related to high-speed CMOS standard logic integrated circuit	1
Patent related to transistor output circuit	1
Manufacturing technology for semiconductor, thin film device, magnetic hub memory, and information management apparatus	1
Technology related to DRAM design	1
Test technology and breakdown analysis program for semiconductors	1
71 Other electrical machinery	5
Oscilloscope manufacturing technology	1
Technology and patent making possible observation of high-speed wave shapes on oscilloscopes, etc.	1
Manufacturing technology for print board automatic optical detection apparatus and inspection repair system	1
Manufacturing technology for nickel-hydrogen battery	1
Control technology for rapid charging of nicad secondary battery	1
80 Other products	
81 Precious metals and personal ornaments (Omitted)	8
82 Leisure goods (Omitted)	1
83 Plastic products	43
Manufacturing technology for and technology related to the application of PET film	3
Manufacturing technology and trademark for poly bag bonding tool	1
Technology for manufacturing and processing of heat reversible resin sheets	1
Manufacturing technology for micro-balloon-filled heat-hardened resin film	1
Manufacturing technology for "naisai" and "nessei" products made from extruded polypropylene foam	1
Idea for buckle made from plastic	1
Manufacturing technology for nylon-type film casing	1
Plastic pipe strengthened with glass textile made using centrifugal pressure formation method	1
Hollow container with label made from micro perforated resin film established in hollow metal	1
Plastic non-trigger-type non-gas sprayer	1
Manufacturing technology for powdered polyvinyl chloride foam compound	1
Film for preserving mask used in lithography process when manufacturing semiconductors	1
Manufacturing technology for extruded foam PET sheet using 100% recycled materials	1



Technology for absorbent goods and their manufacturing	1
Multiplastic film for photolytic farming based on polypropylene	1
Manufacturing technology for distributed closure for liquid materials	1
Manufacturing technology for poly olefin foam sheet bridge-building	1
Manufacturing technology for optical data disk maintenance cartridge	1
Manufacturing technology for foaming agents, extruded foam polystyrene sheets	1
Manufacturing know-how for soft polyurethane foam used in airplane seat cushions	1
Manufacturing technology for polyurethane elastomer (molecular elastic substance) products	1
Extruded bubble sheets using carbon dioxide and N <sub>2</sub> instead of propane gas	1
Manufacturing technology for research implements (cell division flask)	1
Manufacturing technology and recovery system for large plastic rubbish containers	1
Extrusion forming technology for vinyl chloride shapes	1
High torque gear tooth for urethane timing belt	1
Manufacturing technology for products formed from polyurethane resin	1
Manufacturing technology for and technology related to radio wave absorber and radio wave covering material	1
Technology for manufacturing and application of polyester film	1
Technology for forming container with few remaining monomers due to irradiation with radioactive rays	1
Outer skin coated with latex foam material and its processing method	1
Manufacturing technology for tape cassette using polychromatic ray method	1
Manufacturing technology for one- or two-axial stretched film and technology for film's application	1
Manufacturing technology for film and sheets from heat crystal resin	1
Technical information and implementation technology for radioactive ray covering materials	1
Lining technology using hailer (fluorine resin) sheet	1
84 Manufacturing industries not including in other categories (Omitted)	17
90 Other industries	26
General survey on permits, new technical trends, electrical power plants, etc. in European nuclear power field, other industries	1
Analysis of electrical system stabilization	1
Technology for services such as electronic mail, value-added fax, and electronic data exchange	1
Information on operating technology for nuclear power plant	1



Technical information on site selection and safety evaluation for disposal of high level radioactive waste strata	1
Technology for radioactive waste disposal	1
Overhaul, repair and maintenance technology for general industrial gas turbines	1
Technology for removing materials that adhere to inside of heating furnace	1
Technology for analyzing behavior of hydrogen in crack ends in decayed environment	1
Technology for nuclear power plant service	1
Material screening, special testing and design concept evaluation testing technical services	1

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